

is dependent on the life of the ovum. It is difficult to believe that such transient, involuting tissue could give rise to neoplasms. Furthermore, the fact that so many tumors arise in women who are past the period of follicular activity is against such a theory. Circumstantial evidence for the origin from cell rests is the fact that the granulosa cell tumors are found in close relation to such cell rests.

Novak and Brawner<sup>164</sup> expressed the belief that the term "granulosa cell carcinoma" can be properly extended to include cases in which lutein-like transformations of some or all of the cells have occurred, that is, the folliculoma of Lecene and possibly the luteoma. They called attention to one case in which the tumor showed large amounts of lipoid substance. They asserted that the tumor had produced both follicular hormone and corpus luteum hormone, based on the microscopic appearance of the endometrium. Although lutein-like cells have been reported in various tumors, their origin and character have not yet been clearly defined. In general, they seem to be more like the thecal lutein cells than the granulosa lutein cells. The demonstration of a true granulosa lutein cell in ovarian neoplasms may rightly be questioned. Novak and Brawner state

To pursue this subject just a bit further, one may naturally inquire whether we may not consider the so-called luteomas, made up entirely of what are apparently lutein cells, as merely a finished stage of this lutein transformation of primarily granulosal tumors. This is particularly true because it is hard to believe that lutein cells, any more than adult granulosal cells, would give rise to neoplasms. Our knowledge of the real nature of luteomas is too meager to justify any statement as to their exact relation to the granulosal cell group, especially when we bear in mind the confusion existing in the literature because of the difficulty of distinguishing luteoma from adrenal tumors of the ovary (hypernephroma).

For the present, at least, it seems that luteomas might be reclassified and distributed between the group of granulosa cell tumors and that of aberrations from normal corpora lutea. The latter group would include the corpus luteum cysts and thecal lutein cysts. The criticism is valid that granulosa cells are transient, are rapidly undergoing involution through lutein cells and, therefore, having passed the acme of development, are not likely to give rise to neoplasms.

The demonstration that cells of ovarian tumors possess function has opened a new fertile field, exploration of which may reasonably be expected to clarify the whole subject of ovarian tumors.

At present a separate classification of luteomas is not fully justified. Therefore, a further discussion of these interesting ovarian tumors is not pertinent to the subject—the corpus luteum.

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164 Novak, E, and Brawner, J N, Jr. *Am J Obst & Gynec* 28 637, 1934

## COMMENT

The literature on the corpus luteum is voluminous. Often no distinction is made to indicate the species studied. It is difficult, therefore, to separate references to human beings from inferences from animals. In many instances no distinction is made between estrus and menstruation. For the most part, however, experimentation on animals has laid the foundation for interpretation of human problems. Errors arising from deductions have sooner or later been eliminated. Quite general agreement as to the anatomic structure of the corpus luteum has been attained but the concept of its function is still in transition.

The advances made have been possible on account of the accumulated knowledge which has preceded. Recent progress in chemistry, epitomized by the isolation of theelin in pure crystal form from many sources including the corpus luteum, and the isolation of pure crystals of progesterin from the corpora lutea of some animals marks the beginning of a new era. The discovery of the control of ovarian function by the anterior lobe of the hypophysis is important. It is unwise, however, to predict that all disturbed functions of the gonads can be regulated by administration of the secretions of the anterior lobe of the hypophysis. It must be remembered that the physiologic function intrinsic in the gonad must account for some of the major phenomena of the reproductive cycle.

With the development of these new tools it is reasonable to hope for the erection of a better structure than ever before. The expectation is justifiable that eventually a rational therapy will be developed. At present, however, attempts at therapeutic use of the knowledge obtained should be considered as experimental, and interpretation should be critical in order that the progress may continue.

## Notes and News

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**University News, Promotions, Resignations, Appointments, Deaths, etc**—According to *Science* Joseph Tannenberg, professor of pathology at the University of Frankfurt, has assumed the directorship of the Bender Hygienic Laboratory in Albany for one year, taking the place of Arthur W Wright, who is now professor of pathology and bacteriology in the Albany Medical College

Magnus Haaland, director of the Gade Pathological Institute in Bergen, Norway, and well known for his experimental studies on cancer in the first decade of this century, has died from coronary disease at the age of 59

The George M Kober Medal will be awarded to Frank B Mallory, Boston, at the fiftieth annual meeting of the Association of American Physicians in Atlantic City, on May 7 and 8, 1935

**Society News**—The sixty-fourth annual meeting of the American Public Health Association will be held in Milwaukee, on Oct 7 to 10, 1935

**Fellowships in Medicine of the National Research Council**—Fellowships in medicine, administered by the medical fellowship board of the National Research Council, are available for the year beginning July 1. These fellowships are open to citizens of the United States and Canada who possess an M D or Ph D degree. They are intended for recent graduates and not for persons already professionally established. The fellowships are designed to provide research discipline for men and women who are fitted for research in the medical sciences. At present candidates will be favored who plan to specialize in one of the sciences related to medicine or to approach clinical medicine and surgery through temporary identification with one of these sciences

**Bowman Cancer Fund**—For the present the income from the Bowman bequest to the University of Wisconsin is to be used for a series of special fellowships for research on cancer

# Abstracts from Current Literature

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## Experimental Pathology and Pathologic Physiology

SPORADIC CRETINISM IN ONE OF TWINS    GEORGE B. DORFF, *Am J Dis Child* **48** 1316, 1934

A review of the literature reveals a case of sporadic cretinism in one of male twins (the other being normal) reported by Herrman, an atypical case in each of male twins reported by Manson, and a third case of suspected cretinism in each of twins reported by Petschacher. Two additional cases are presented in which sporadic cretinism occurred in two sets of differently sexed twins, one twin in each set being involved, the other twin being normal in all respects. For the first time definite roentgen evidence is given that the retarded osseous development in a twin with congenital sporadic cretinism occurred in utero. It is believed that (a) there is an independent low grade fetal thyroid activity which is not directly influenced by the maternal thyroid hormone, (b) there is probably no transmission of the thyroid hormone through the placenta from either the mother or the fetus. Stress is placed on the importance of studying the development of the bones in the new-born suspected of having hypothyroidism by roentgenograms.

AUTHOR'S SUMMARY

THE RELATION OF AMIDOPYRIN AND ALLIED DRUGS TO THE ETIOLOGY OF AGRANULOCYTIC ANGINA    HENRY JACKSON, *Am J M Sc* **188** 482, 1934

In 26 per cent of the cases of agranulocytosis studied the disease followed the administration of amidopyrine or allied drugs. That in these instances the disease may have been caused by the drugs is possible, perhaps probable. In 30 per cent of the cases the evidence shows that in spite of the fact that these drugs were taken in considerable quantities they had no causative relation to the disease. Forty-four per cent of the patients received no drugs of this type, yet the clinical and hematologic pictures were similar in every respect to those of patients who had taken these drugs.

FROM THE AUTHOR'S SUMMARY

THE EXOPHTHALMOS OF GRAVES' DISEASE    DAVID MARINE and S. H. ROSEN, *Am J M Sc* **188** 565, 1934

Chronic and progressive exophthalmos can now be readily produced in immature rabbits maintained on a diet of alfalfa hay and oats by injecting pituitary extracts or cyanide (preferably methyl cyanide). Production by both these means depends on two factors: (1) the presence of the thyrotropic hormone of the anterior lobe of the pituitary gland, in the one case supplied passively and in the other produced by stimulation of the pituitary gland, and (2) the existence of a relative thyroid insufficiency. The maintenance of a normal thyroid state by the administration of iodine or thyroxine prevents the exophthalmos that would otherwise be produced by the cyanide or by the pituitary extract. This indicates that normally there is a delicate physiologic balance between the thyroxine needs and the thyrotropic hormone. As regards therapy, iodine and desiccated thyroid gland appear to be the only logical remedies available at present, but neither in human exophthalmos nor in experimental exophthalmos of rabbits are the results promising.

AUTHORS' SUMMARY

FIVE-YEAR SURVIVAL IN HODGKIN'S DISEASE    LLOYD F. CRAVER, *Am J M Sc* **188** 609, 1934

Of 310 cases of Hodgkin's disease, 125 proved by biopsy, 103 per cent showed survival of the patients for five years or more following irradiation—of the proved

cases, 16.8 per cent. Five year survivors were, on the average, ten years younger (34 years of age) than a group that had survived for six months or less, though the extremes of age were the same in the two groups. The difference in the period of survival between the two groups is apparently due to a difference in the virulence of the disease. This, however, showed no correlation with the histologic appearance of the nodes removed at biopsy. Favorable features were localization in one area, if combined with early thorough treatment, absence of leukocytosis or leukopenia, gain in weight after irradiation. Fever, marked pruritus and splenomegaly were apparently unfavorable signs.

AUTHOR'S SUMMARY

CHRONIC CONGESTIVE SPLENOMEGALY AND ITS RELATIONSHIP TO BANTI'S DISEASE  
RALPH C. LARRABEE, *Am J M Sc* **188** 745, 1934

On the basis of a study of forty-seven cases the view is expressed that in the majority of patients presenting Banti's disease (splenomegaly with fibrosis, microcytic anemia with leukopenia and, in a late stage, hemorrhages and ascites) the condition is dependent on various intra-abdominal lesions obstructing the venous outflow of the spleen. By far the commonest of these is hepatic cirrhosis of various types. As Banti has limited the definition of the disease which bears his name in such a manner as to exclude conditions of the latter type it is thought best to segregate these under a distinctive name. However, splenectomy is indicated just as in Banti's disease, regardless of the nature of the underlying lesion.

AUTHOR'S SUMMARY

ON THE INHERITANCE OF DIABETES MELLITUS. GREGORY PINCUS AND PRISCILLA WHITE, *Am J M Sc* **188** 782, 1934

In a group of relatives of diabetic persons the blood sugar was determined and the sugar tolerance test was given. Approximately 14 per cent of those whose blood sugar was determined and 25 per cent of those given the sugar tolerance test had abnormally high blood sugar values as compared with similar determinations on control groups of normal healthy persons with no familial history of diabetes. When one examines the incidence of such "hyperglycemic" persons among the offspring of various types of matings, the data suggest that such persons may be taken as future diabetic patients, since the ratios of such persons among the offspring of these matings are approximately proportional to the ratios of presumed unidentified genetically diabetic persons called for by the mendelian hypothesis advanced to explain the inheritance of diabetes. These tests do not, however, reveal all the genetically diabetic persons. It is pointed out that if these tests have any general significance they indicate that the establishment of normal blood sugar values requires the strict exclusion of relatives of diabetic persons from the group of normal persons supplying the data.

AUTHORS' SUMMARY

A FAMILIAL HEMORRHAGIC CONDITION SIMULATING HEMOPHILIA AND PURPURA HEMORRHAGICA. JASON E. FARBER, *Am J M Sc* **188** 815, 1934

This study concerns five generations of a family totaling more than one hundred members twenty-five of which suffer from atypical pathologic hemorrhages. Fourteen (56 per cent) of these twenty-five members are males, eleven (44 per cent) are females. In regard to the males, the family tree has a striking similarity to that of hemophilic persons, but the affliction is essentially purpuric. The males have been more markedly involved, four of their number dying directly from hemorrhage. The hemorrhagic incidents are variable, but consist chiefly of prolonged frank bleeding from a cut or wound, ecchymoses and epistaxis in the males and menorrhagia and ecchymoses in the females. The coagulation time of the blood is normal, the bleeding time is intermittently prolonged, the platelets are numerically adequate, and the clot retracts normally, the chemistry of the

blood is normal. There seems to be no definite relation of the bleeding to season, diet, infection or occupation. Telangiectasis and splenomegaly are absent. Hypertension "runs in the family", hemorrhages of the brain are frequent. No diagnosis is attempted, further studies are in progress.

AUTHOR'S SUMMARY

FORMATION OF INTERCELLULAR SUBSTANCE BY THE ADMINISTRATION OF ASCORBIC ACID (VITAMIN C) IN EXPERIMENTAL SCORBUTUS. V. MINIKIN, S. B. WOLBACH and M. F. MENKIN, *Am J Path* **10** 569, 1934.

Ascorbic acid (vitamin C in crystalline form) administered orally or parenterally to scorbutic guinea-pigs induces reparative processes as demonstrated by the renewal of dentin in the incisor teeth and by the deposition of osteoid matrix and chondromucin at the costochondral junction. These effects on the formation of intercellular substance are in accord with those previously obtained by Wolbach and Howe, feeding orange juice. They furnish additional support for the view that ascorbic acid is indistinguishable from vitamin C. The evidence obtained indicates that a relatively simple chemical substance, ascorbic acid, controls the deposition of intercellular substance. The possible mechanism involved in this reaction is discussed from the standpoint of the properties of ascorbic acid as a reducing agent in relation to cellular oxidations.

FROM THE AUTHORS' SUMMARY AND CONCLUSIONS

THE FUNCTIONAL REACTIONS OF THE HUMAN THYROID. N. GOORMAGHTIGH and F. THOMAS, *Am J Path* **10** 713, 1934.

A systematic histologic survey was made of a large series of human thyroid glands collected at autopsies in Ghent, Belgium, where endemic goiter is rare. In the normal thyroid gland, four types of epithelium were found: (1) the low cuboidal cell type which secretes colloid slowly into the follicular cavity, (2) the large high cuboidal cell type, which secretes colloid actively, (3) the columnar type, which absorbs the stored colloid and excretes the hormone into the circulation, and finally (4) the endothelioid type which is associated with a very slow secretion of colloid.

Under normal conditions the amount of stored colloid is kept fairly constant by the compensatory activity of columnar epithelium, on the one hand, and cuboidal epithelium, on the other. The cushion-like papillary proliferations (Sanderson) of the acinar wall are regarded as the result of functional stimulation of the excretory zone.

Under pathologic conditions, increased hormonal excretion into the circulation is compensated for by increased intrafollicular secretion. This compensated stage may last ten days. In cases of peritonitis following appendicitis, in intestinal obstruction and occasionally in diphtheria, there is evidence of an early decompensation, the excretion predominating over the intrafollicular storage.

C. A. HRIWIG

THE RELATION OF INCREASED INTRA-ABDOMINAL PRESSURE TO THE LIVER LESIONS OF ECLAMPSIA. M. B. STRAUSS and S. MADDOCK, *Am J Path* **10** 821, 1934.

Elevation of the intra-abdominal pressure according to the technic of Theobald was without effect on the livers of seven dogs anesthetized with ether. A chloroform-ether anesthetic mixture such as that employed by Theobald resulted in extensive central necrosis of the livers of three of four dogs, only two of which were subjected to increases of intra-abdominal pressure. The theory that the hepatic lesions of eclampsia are due to increased intra-abdominal pressure although an attractive one, must be considered as unproved.

FROM THE AUTHORS' SUMMARY

HYPERTHYROIDISM DUE TO DIFFUSE PARATHYROID HYPERTROPHY  
ALBRITG, E. BLOMBERG, B. CASTLIMAN and E. D. CURRIE, Arch Int  
Med **54** 315, 1934

Three patients with hyperparathyroidism were found to have hyperplasia of all the parathyroid glands. The structure of the glands differed markedly from that when there is enlargement of only one parathyroid gland. The distinctive features were the uniformity of structure, the enormous size of the cells, the extreme clearness of the cytoplasm and the tendency to gland formation. A distinction is made between parathyroid hyperplasia with hyperparathyroidism and compensatory hyperplasia of the parathyroid glands. An analogy between the former and exophthalmic goiter is made. Hyperplasia of the parathyroid glands with hyperparathyroidism is considered as an entity. The surgical treatment of this condition brings up some interesting questions. Thus, removal of two enlarged glands in one of these patients was without effect on the levels of the blood calcium and inorganic phosphorus. Even with removal of sufficient tissue to alter the blood chemistry the condition may recur. A review of 101 cases of hyperparathyroidism revealed 17 cases, including these 3, in which there was general parathyroid enlargement. The cause of the hyperplasia may be a parathyroid-stimulating factor, possibly from the hypophysis.

FROM THE AUTHORS' SUMMARY

SPIRIT POISONING (LATRODICTUS MACTANS) A. W. BLAIR, Arch Int Med  
**54** 831 and 844, 1934

The venom of the adult female spider *Latrodectus mactans* is dangerously poisonous to man. The development of the clinical picture may be divided into three stages, the second of which, that of shock, is the most critical. The sequence of symptoms is sufficiently characteristic to entitle it to recognition as a clinical entity in the field of general medicine.

*Latrodectus mactans* is the only spider found in the United States that has been proved to be poisonous. No complete study of its life history has hitherto been made, however. For the past two years a study of this spider as found in the vicinity of Tuscaloosa, Ala., has been made. Observations, accompanied by illustrations, on its appearance, habitat, web feeding habits, mating, egg sac, eggs, development, span of life and danger to man are presented.

FROM THE AUTHOR'S SUMMARIES

NEUROGENIC EROSIONS AND PERFORATIONS OF THE STOMACH AND ESOPHAGUS  
M. G. MASTIN and R. C. BUNTS, Arch Int Med **54** 916, 1934

Masten and Bunts report six cases of lesions in the brain associated with erosions and perforations of the upper part of the gastro-intestinal tract. These cases support the hypothesis advanced by Cushing that gastromalacia and ulcers of the upper part of the gastro-intestinal tract may be related to disease of the interbrain and caused by parasympathetic stimulation. They bring forward experimental evidence as to the location of the parasympathetic and sympathetic centers of the interbrain.

INFLUENCE OF BLADDER TRANSPLANTS ON THE HEALING OF DEFECTS OF BONE  
G. H. COPIER and J. A. KRY, Arch Surg **29** 64, 1934

In attempting to bridge defects in the dog's ulna after excision of 1 cm., the observation of Huggins that the epithelium of the urinary bladder influences the formation of bone was applied. One ulna was used for a control. In the defect of the other mucosa from the bladder of the same dog was inserted. Of sixteen dogs twelve showed union of the side with the transplant, while in only two of the controls did union take place. New bone formation was present in only three of the controls but was seen in all of the dogs in which transplants were used.

It seemed that the new bone formed adjacent to the mucosa of the bladder and directly in connective tissue but was not preceded by formation of cartilage

T D ROBERTSON

EFFECT OF PARATHYROID EXTRACT ON THE KIDNEY AND BLOOD IN MAN R  
ELLSWORTH and J E HOWARD, Bull Johns Hopkins Hosp 55 296, 1934

The intravenous injection of 40 units of parathyroid extract into normal persons is followed by an immediate outpouring of phosphorus in the urine. In some instances there was a diuresis, but in others this did not occur. The urea clearance was not markedly altered, the excretion of chloride was diminished rather than augmented, the  $p_H$  of the urine tended to shift to a more alkaline range. There was a relatively slight fall in plasma inorganic phosphorus. The serum calcium in several instances, instead of rising, tended to fall. The theoretical implications of these findings are briefly discussed

FROM THE AUTHORS' SUMMARY

BIOLOGIC EFFECTS OF THYMUS EXTRACT L G ROWNTREE, J H CLARK and  
A M HANSON, J A M A 103 1425, 1934

Thymus extract (Hanson) accelerated the rate of growth and development and hastened the onset of adolescence in the offspring of treated rats, and seemed to increase the fertility of parent rats. The injection of thymus extract into parent rats in succeeding generations resulted in an amplification of the effects of the thymus extract

AUTHORS' SUMMARY

STUDIES ON ORGANOGENESIS R C PARKER, J Exper Med 60 351, 1934

Isolated blood cells, when incubated in a plasma substratum, are capable of constructing highly organized tubular processes that project from the explanted cell mass into the surrounding medium. The tubular structures have fibrillar walls that may be covered eventually by a membranous layer of leukocytes. Their lumens contain blood cells suspended in fluid. The formation of the tubules is initiated by the red cells. The leukocytes, more particularly the thrombocytes, are responsible for the construction of the walls. The phenomenon occurs only in the presence of plasma the coagulation of which has been slightly delayed. Once the surrounding medium has become firmly coagulated, no further change occurs in the length or in the diameter of the tubules. The development of the tubules is not suppressed by substances that enhance cellular activity unless they induce, at the same time, immediate coagulation of the medium. The addition of the juice of embryo tissue prevents the formation of these structures by producing early coagulation. The phenomenon as a whole is dependent on the physicochemical nature of the medium, the character and thickness of the explanted fragment and the physical peculiarities of the cells that comprise it. It is the expression of various physicochemical and physiologic events that have occurred in a definite order or sequence

FROM THE AUTHOR'S SUMMARY

THE METABOLISM OF COPPER AND IRON IN SPLENECTOMIZED RATS FREE FROM  
BARTONELLA MURIS INFECTION M SANDBERG and D PERLA, J Exper Med  
60 395, 1934

In albino rats free from infection with Bartonella muris removal of the spleen is followed by an increased elimination of copper in the feces, which commences two weeks after splenectomy, the metabolism of iron returning to normal after this period. No disturbance in the metabolism of creatine or creatinine occurs. The amount of uric acid is unchanged. There is an increase in the nitrogen retained, first noted three weeks after splenectomy. The spleen is essential for the utilization of copper in the body

FROM THE AUTHORS' SUMMARY



A FACTOR INCREASING TISSUE PERMEABILITY IN ORGANS OTHER THAN THE TESTICLE A CLAUDE and F DURAN-REYNALS, J Exper Med **60** 457, 1934

Many of the organs from animals of both sexes, including the ovary, have been found to contain in various proportions a factor or factors increasing the permeability of the tissue. The potency exhibited by such active extracts was always less than that of extracts from the testicle. Blood serum was found to be devoid of any spreading property.

FROM THE AUTHORS' SUMMARY

THE PARTICIPATION OF SKIN LYMPHATICS IN THE REPAIR OF LESIONS DUE TO INCISIONS AND BURNS P D McMASTER and S S HUDACK, J Exper Med **60** 479, 1934

With the aid of solutions of vital dyes, the lymphatic capillaries in the ear of the mouse have been studied during the period of immediate reaction to injuries of various sorts and during the period of repair. The behavior of lymphatics severed by incision differs greatly from that of small blood vessels. Instead of closing they sometimes remain open for as long as forty-eight hours. Materials introduced into the wound pass directly into the lymphatics through their gaping ends, a fact which will explain why infection from incisions is predominantly along the lymphatics. All around an injury the lymphatics are rendered abnormally permeable. So, too, are the blood vessels, a fact well recognized in the past. From twenty-four to forty-eight hours later, at a time when the blood vessels in the edematous tissue surrounding the injured area are still much more permeable than normal, the draining lymphatics allow far less to escape than usual. The possible reasons for this have been discussed. The lymphatics participate in the removal of fluid from the edematous tissue. As repair after injury takes place severed lymphatics may reunite when as yet there are no functioning blood vessels. Later an active hyperplasia of the lymphatic channels occurs, with budding of an extraordinarily abundant plexus of minute lymph capillaries into the area under repair.

FROM THE AUTHORS' SUMMARY

IRREVERSIBLE CHARACTER OF THE LATE CHANGES AFTER HEPATECTOMY P D McMASTER and D R DRURY, J Exper Med **60** 503, 1934

The symptoms of advanced hepatic insufficiency in the hepatectomized rabbit are irreversible. That is to say, cross-transfusions between liverless rabbits and normal ones fail to ameliorate the symptoms of deprivation of liver once they are established. The normal rabbits show no symptoms suggesting that toxic substances have accumulated in the blood of the hepatectomized ones.

FROM THE AUTHORS' SUMMARY

METABOLIC EFFECTS OF HOST CONSTITUTION IN MOUSE LEUKEMIA J VICTOR and J S POTTER, J Exper Med **60** 547, 1934

The genetic constitution of the host modifies the metabolism of the cell line. The same host constitution may modify the metabolism of different cell lines in different ways. The constitution of the host does not appear to modify the inherent constitution of the leukemic cells, but acts on their metabolism as a determining environmental factor.

FROM THE AUTHORS' SUMMARY

### Pathologic Anatomy

THROMBOSIS AND PULMONARY EMBOLISM T H BELT, Am J Path **10** 129, 1934

Pulmonary embolism is to be observed in approximately 10 per cent of autopsies on adult persons and is much commoner in medical than in surgical cases. In more than half of the cases there are infarcts of the lungs, and in nearly all there are repeated embolisms occurring over a period of hours, days or weeks.

Thromboses of leg and pelvic veins are the chief source of dangerous pulmonary emboli. Such thromboses commonly develop without clinical manifestations, and no evidence of active inflammation is shown in the adjacent wall of the vein. The dangerous type of thrombosis has a high incidence in cases of cardiac insufficiency. From the work of Blumgart and Weiss it is evident that the flow of blood in the veins is slowed when the heart's function is impaired, and slowing of the blood stream is known to favor thrombosis. Other factors seeming of lesser significance in the present series of cases, I regard circulatory embarrassment as of prime importance in the etiology of venous thrombosis and pulmonary embolism. A high percentage of postoperative fatalities from pulmonary embolism show evidence of minor degrees of cardiac incompetence.

#### FROM THE AUTHOR'S SUMMARY AND CONCLUSIONS

THE PATHOLOGIC ANATOMY OF THE LIVER IN EXOPHTHALMIC GOITER D. C. BLAYLER and J. D. J. PIMBERTON. *Ann Int Med* 7 687, 1933

The pathologic anatomy of the liver and the correlated clinical findings in 107 cases of exophthalmic goiter are recorded. There are three types of hepatic lesions: (1) acute degeneration (fatty metamorphosis, focal and central necrosis and changes secondary to vascular stasis), (2) simple atrophy, (3) subacute toxic atrophy and toxic cirrhosis. The incidence of these lesions was as follows: (1) acute lesions—95 per cent, of which fatty changes composed 87.8 per cent, (2) atrophy—63.55 per cent with an average hepatic weight of 1,316 Gm., (3) subacute toxic atrophy and cirrhosis—59.81 per cent. Jaundice occurred in 21.5 per cent. The basic factor in all these lesions appears to be the severity of the syndrome of exophthalmic goiter. The hepatic lesions appear to be an integral part of the syndrome and due directly to thyroid intoxication. JACOB KLEIN

LEUENH ELASTOSIS. FRED D. WEIDMAN, N. P. ANDERSON and S. AYRES. *Arch Dermat & Syph* 28 182, 1933

A child, aged 5½ years, presented nodular lesions on the trunk, buttocks and thighs, of a color varying from flesh tone to ivory white and pink. Section showed marked elastosis.

VITILIGO. S. W. BECKER. *Arch Dermat & Syph* 28 497, 1933

Study of sections at the border of vitiliginous patches showed that in the depigmented portion only the small clear cells (*cellules claires*) of Masson are found. In the pigmented portion large dendritic pigment-containing cells are seen, which have the same location and staining characteristics as the clear cells. It is therefore evident that enlargement and pigment formation are associated functions of these cells. In recent patches of vitiligo a few dendritic pigment-containing melanoblasts were found, but in old patches only the small clear cells were present. This seems to explain the different results of different authors in treating patients by the same methods. Studies of sections from patches of pinta by pigment methods showed that the process begins as an inflammatory one with pigment activity, followed by a most marked deposition of melanin in histiocytes in the superficial dermis. This accounts for the blue stage of pinta. This is followed later by complete depigmentation. In the depigmented patches of pinta practically no clear cells could be seen. AUTHOR'S SUMMARY

FAT IN THE CELLS OF TISSUE CULTURES. K. HASZLER, *Beitr z path Anat u z allg Path* 92 101, 1933

Fat appears in the fibroblasts of tissue cultures. It is the result of specific cellular metabolic activities. The fat of the substrate may be phagocytosed and burned by the cell. The formation of fat from sugar could not be demonstrated.

O. T. SCHULTZ

FAT EMBOLISM OF THE LUNGS L JANKOVICZ, Beitr z path anat u z allg Path **92** 110, 1933

In thirty-one casualty fatalities, fat embolism of the lungs was observed as long as fourteen days after the accident, if the victim lived that long or longer. Resorption of the fat from the lungs is not due to cellular activity but to ferment action which takes place in the capillaries.

O T SCHULTZ

MELANOSIS OF THE COLON DUE TO BISMUTH G MICSEH Beitr z path Anat u z allg Path **92** 146, 1933

Micseh describes the gross and histologic changes in two cases of melanosis of the colon due to bismuth. The patients had received injections of bismuth compounds in the treatment of syphilis. The finely granular, brownish-black pigment, which was situated chiefly in the capillary endothelium of the mucosa, gave the chemical reactions of bismuth.

O T SCHULTZ

HEMORRHAGIC AGRANULOCYTOSIS E NACHTNEBEL, Beitr z path Anat u z allg Path **92** 156, 1933

Under the name "aleukia haemorrhagica" Nachtnebel reports three cases of agranulocytosis in which hemorrhage was a feature. In two cases there was marked aplasia of the bone marrow. The patients were receiving treatment with arsphenamine for syphilis when the terminal illness developed. He ascribes the changes in the bone marrow, to which sepsis was secondary, to the action of arsenic. In the third case sepsis was the primary factor. Massive roentgen irradiation of the long bones of dogs led to a condition clinically and anatomically similar to human agranulocytosis.

O T SCHULTZ

DIFFUSE SYPHILIS OF BONE H REME, Beitr z path Anat u z allg Path **92** 290, 1933

In two cases of diffuse syphilitic osteitis, microscopic examination revealed areas of alternate bone resorption and bone formation along the haversian canals and on the bone trabeculae. This process had resulted in the formation of the mosaic bone that Schmorl has considered characteristic of Paget's osteitis deformans. From his findings Reme holds that mosaic structure cannot be considered histologically characteristic of osteitis deformans, and that assertions of the frequency of Paget's disease in prehistoric bones may not be warranted. The differentiation between osteitis deformans and syphilis must rest on the greater degree of periosteal involvement in syphilitic osteitis, this process may not be detectable in dried bones.

O T SCHULTZ

MYOCARDIAL NECROSIS DUE TO CORONARY INSUFFICIENCY F BUCHNER, Beitr z path Anat u z allg Path **92** 311, 1933

In four hearts with deficient coronary circulation as the result of coronary or aortic disease, from persons who during life had had attacks of angina pectoris on exertion, there were observed multiple small necroses of the inner layer of the myocardium and of the papillary muscles of the left ventricle. These lesions, which are termed "the morphologic substrate of angina pectoris", were held to be the result of ischemia due to insufficiency of the coronary circulation during sudden exertion. The findings are interpreted as confirmatory of Mackenzie's view that the pain of angina pectoris is due to muscular ischemia. To determine experimentally whether sudden insufficiency of the coronary circulation could produce such myocardial necroses, rabbits that had been kept quiet in individual cages were rendered acutely anemic by a single bleeding from the ear vein. From fifteen minutes to one hour later they were placed in an electrically driven treadmill. The animals became exhausted in from five to seventeen minutes, and three died.

within a half hour. The remaining animals, five in number, were killed at intervals of seven, ten and twenty hours and five and eight days. The myocardium of the left ventricle was examined histologically for necroses. No changes were detected in the animals that died from the exertion of the treadmill. All the remaining rabbits revealed multiple necroses of the myocardium, with fibroblastic reparative changes in those animals that were allowed to survive longest. Control animals that were killed at intervals after bleeding revealed no myocardial necroses.

O T SCHULTZ

EXCRETION OF LIPOIDS BY THE LUNGS. E. JECKELN, Beitr z path Anat u z allg Path **92** 357, 1933

Microscopic examination of the lungs of a child, aged 6 years, who died of lymphoid leukemia revealed the presence of striking amounts of lipid material in the interalveolar capillaries and alveolar spaces. The material occurred in the form of fine droplets, granules and larger masses, some of it was contained in alveolar phagocytes. It was present in largest amount in the capillaries of those parts of the lungs in which the alveoli were filled with lymphocytes or erythrocytes. To study the fate of fat in the lungs, milk and olive oil were introduced intratracheally into rabbits. From the experiments and from the study of the human material, Jeckeln interprets the unusual findings in the case of leukemia as evidence of excretion of lipoids by the lungs. He postulates that the child had lipemia, it is to be noted that such a state of the blood was not detected during life. In the lung capillaries, probably through enzymatic action, the lipid material was partly saponified, subdivided, emulsified, excreted into the alveoli and removed in the sputum. Where excretion into the alveoli was interfered with by filling of the air spaces with cellular or hemorrhagic exudate the capillaries contained the largest amounts of the material.

O T SCHULTZ

THE PATHOLOGIC ANATOMY OF INJURIES TO THE LUNGS. L. M. EIDLIN, Deutsche Ztschr f d ges gerichtl Med **22** 445, 1934

At the place of injury or hemorrhage in the lung appear early large cells which take up red cells. These cells appear to arise from the alveolar epithelium. Histocytes and endothelial cells do not seem to take part in the phagocytosis of red cells.

BENIGN NEPHROSCLEROSIS AND ARTERIAL HYPERTENSION. P. KIMMELSTIEL, Virchows Arch f Path Anat **290** 245, 1933

The kidneys of persons who had had arterial hypertension during life were perfused with physiologic solution of sodium chloride as soon after death as possible. Normal human kidneys, secondarily contracted kidneys and kidneys showing malignant nephrosclerosis were perfused in the same way. The perfusion time for a unit volume of liquid was correlated with the histologic changes in the kidney. The occurrence of essential hypertension without recognizable vascular alterations is accepted. With increasing age hyperpiesis becomes associated with arterial and arteriolar sclerosis of the renal vessels. At a certain degree of arterial involvement the perfusion time was found to be increased. This critical point is characterized histologically by disappearance of parenchyma and functionally by latent renal insufficiency.

O T SCHULTZ

ATYPICAL AMYLOIDOSIS. BERTEL VON BONSDORFF, Arb a d path Inst d Univ Helsingfors **7** 369, 1933

A detailed clinical, pathologic and biochemical study is reported of atypical amyloidosis as it occurred in a 51 year old man whose illness began from two to three months after the fracture of a rib and terminated fatally one and a half years later. Large, firm, symmetrical swellings developed in the vicinity of the

large joints and on the tongue. Microscopically the swellings were amyloid in nature. Biochemical examination demonstrated a disturbance in the metabolism of albumin. The plasma protein fraction showed a preponderance of fibrin and globulin. Bence-Jones protein was not found. The amyloid substance acted like a foreign body, giant cells were frequently found at the periphery of such an accumulation. There was no evidence of multiple myeloma. Multiple myeloma may occur without amyloid formation, and atypical amyloidosis may occur without myeloma. Von Bonsdorff believes that classic as well as atypical amyloidosis is due to a disturbance in the metabolism of albumin. Pathologic changes in the bones predispose to a diffuse amyloidosis. The etiologic relation of trauma is discussed, and numerous cases are cited from the literature which tend to indicate a causative relation between bone trauma and amyloidosis.

JACOB KLEIN

INFLAMMATORY REACTION IN THE OMENTUM. P. E. A. NYLANDER, *Arch. path. Inst. Univ. Helsingfors* 7:453, 1933.

The inflammatory response of the omentum was studied microscopically in a series of 100 appendectomies. Mere eventration of the omentum during the course of operation was sufficient to cause definite inflammation after ten minutes. In acute appendicitis the omentum showed a preponderance of polymorphonuclear cells in the inflammatory reaction. The macrophages were next in frequency, while the lymphocytes and plasma cells were scarce. In peritonitis the polymorphonuclear cells predominated during the first twenty-four to forty-eight hours, afterward the monocytes were more numerous. In several fatal cases of peritonitis following appendical perforation there was no noteworthy inflammatory reaction in the omentum. This may indicate a poor resistance or an overwhelming infection. In interval appendectomies it was observed that the omentum displayed a marked ability to return to normal. No noteworthy differences in the inflammatory response were observed in relation to age or sex. The defensive function of the omentum depends on the activity of the neutrophils. Macrophages, mesothelial cells and lymphocytes are of secondary importance.

JACOB KLEIN

ENDOMETRIOSIS ESPECIALLY REGARDING LOCALISATION IN THE ABDOMINAL WALL (LAPAROTOMY SCARS), WITH A STUDY OF EXPERIMENTAL TRANSPLANTATION OF ENDOMETRIUM. H. F. HARBITZ, *Acta chir. Scandinav.*, supp. 30, p. 1, 1934.

In the first part of the work the history of endometriosis is reviewed, especially the chief theories that have been advanced respecting the pathogenesis of the disease. These are: development through outgrowth from uterine or tubal mucosa, origin from fetal remnants of the wolffian body (the wolffian theory of von Recklinghausen), derivation from serosal epithelium (R. Meyer) or from persistent cells with the properties of the celomic epithelium, metastatic origin through lymphatic or venous channels, and occurrence owing to implantation of differentiated müllerian tissue (Sampson's theory). It is especially the seroso-epithelial theory and the implantation theory that stand in sharp opposition to each other at present. I have dealt at some length with Sampson's theory, which seems to have much in its favor, particularly on account of the experiments made in late years in transplantation and explanation of endometrium.

Further there is given a short account of the most important clinical features and chief localizations of endometriosis in the genital organs, in other parts of the peritoneal cavity and, extraperitoneally, in the groin, navel, laparotomy scars and perineum. Especially the last named localizations are of interest in this work. An endeavor is made to bring forward clinical facts that may be taken to support the view that endometriosis in these localizations has arisen through continuous outgrowth or through implantation of differentiated müllerian tissue.

On the basis of my own cases I have discussed the not infrequent occurrence of inguinal endometriosis in combination with hernias of different kinds, and the

simultaneous appearance of inguinal endometriosis and intraperitoneal endometrial growths, as well as the combination of inguinal endometriosis with endometriosis in laparotomy scars in the same region. The occurrence of all these combinations seems to speak for the assumption that inguinal endometriosis may arise through outgrowth or through implantation.

As regards endometriosis in the navel, the same combination with a hernia or with a laparotomy scar may be encountered. Further it is pointed out that on the posterior aspect of the umbilicus there are very often found peritoneal pouches, which must be supposed to favor the reception and implantation of endometrial particles.

The second part of the work deals with endometriosis in laparotomy scars (and in the perineum). On the basis of fifteen cases of my own, and also of instances collected from the literature, I have made an analysis of this particular localization of endometriosis, especially in order to cast light on the pathogenesis. It will here be sufficient to refer to the summary at the end of the chapter (p. 222).

The third part treats of experimental transplantation of endometrium in rabbits, including transplantations in the abdominal wall and in laparotomy scars. Also here I confine myself to referring to the summary at the end of the chapter (p. 361).

Through this combination of theoretical examination of the implantation theory with clinical analysis, particularly of endometriosis in the abdominal wall, and through experiments in transplantation of endometrium, it has been my object to show the probability of the origin of the disease, at all events of extraperitoneal endometriosis in the abdominal wall, from differentiated müllerian tissue through continuous outgrowth or through implantation.

FROM AUTHOR'S SUMMARY

SUDDEN DEATH FROM OBSTRUCTION OF THE MITRAL ORIFICE BY AN AURICULAR THROMBUS. NILS LIEBERG, *Acta path et microbiol Scandinav*, supp 16, p. 219, 1933.

Two cases of sudden death from mitral stenosis are reported. In one the mitral orifice was closed by a ball thrombus from the auricle. In the other polypoid extension of a mural thrombus in the left auricle occluded the orifice. The clinical resemblance to pulmonary embolism is pointed out.

JACOB KLEIN

MAST CELLS. U. QUENSLI, *Acta path et microbiol Scandinav*, supp 16, p. 358, 1933.

Mast cells are found in connective tissue and the blood, also in the thymus in increasing numbers with increasing age. In diameter they vary from 8 to 37 microns, and are actively ameboid. Their function is to secrete mucin for the interfibrillar substance of connective tissue. Ehrlich described them as the non-phagocytic nutritive wandering cells.

JACOB KLEIN

STRUCTURAL CHANGES IN SWEDISH CASES OF JUVENILE AMAUROTIC IDIOTCY. EINAR SJOVALL and ERIC ERICSSON, *Acta path et microbiol Scandinav*, supp 16, p. 460, 1933.

This report concerns anatomic studies on nineteen cases of juvenile amaurotic idiocy. The morphologic changes have shown surprising uniformity. There was constant involvement of the neostriatum associated with lipid deposits and macroglial changes. The latter also occurred in the cerebral as well as the cerebellar cortex independently of the lipid deposits in the ganglion cells. Other findings, such as degeneration of ganglion cells, atrophy of myelin sheaths and fibrogliosis, agree with changes in normal senescence. The authors conclude that in amaurotic idiocy there is a precocious senescence due to disturbance of lipid metabolism.

JACOB KLEIN

SPONTANEOUS HYPOGLYCEMIA THOR STENSTROM and HELGE SJOVALL, *Acta path et microbiol Scandinav*, supp 16, p 484, 1933

A 35 year old woman, whose blood had a sugar content of 0.035 Gm per hundred cubic centimeters, died after a period of illness with weakness, loss of appetite, headache and mental disturbances. The anatomic study demonstrated fibrosis and atrophy of the hypophysis, atrophy and sclerosis of the thyroid gland, atrophy of the suprarenal glands and premature involution of the ovaries. Small arteries in all the organs, especially the kidneys, showed sclerosis, fatty change and endarteritis. The authors suggest the possibility of a toxic disturbance of the blood vessels as the cause. There are a review and discussion of the pertinent literature.

JACOB KLEIN

### Microbiology and Parasitology

RHEUMATIC HEART DISEASE AT ONE YEAR VINCENT E FISCHER, *Am J Dis Child* 48 590, 1934

Rheumatic heart disease, established by postmortem examination, is described in an infant 12½ months old, whose mother had acute rheumatic fever from the third to the seventh month of its fetal life. FROM THE AUTHOR'S SUMMARY

VARIETIES OF TYPHUS VIRUS AND THE EPIDEMIOLOGY OF THE AMERICAN FORM OF EUROPEAN TYPHUS FEVER (BRILL'S DISEASE) H ZINSSER, *Am J Hyg* 20 513, 1934

Brill's disease is an imported form of the classic European typhus fever. The cases observed in New York and Boston represent recrudescences of old infections originally acquired in European foci. In communities not heavily louse-infested such cases remain sporadic, but in louse-infested and crowded areas they may furnish foci for the origin of small or large outbreaks. They may thus serve to maintain endemic prevalence by bridging breaks in the chain of man-lice-man propagation. It is suggested that this is the manner in which the European virus has been maintained in continental foci for centuries. Rat reservoirs are thus not necessary for the endemic continuance of the disease, though they probably coexist.

FROM THE AUTHOR'S SUMMARY

ON AIR-BORNE INFECTION (VIABILITY OF DROPLET NUCLEI INFECTION) W F WELLS and W R STONE, *Am J Hyg* 20 619, 1934

With all speculation disregarded and the limitations of the experiments, the volume of data and the circumstances of control recognized, it seems to be demonstrated that bacteria can remain suspended alive in the air for periods which may permit their wide dissemination. It also seems obvious that the time and distance droplet nuclei infection may travel depend more on the viability of the microorganisms in air than on their settling rate. Important differences in viability in air of microorganisms are apparent, and these differences seem to be consistent with the etiology, epidemiology and pathology of air-borne infection. Without attempting to interpret these facts in terms of epidemiology, the need of further study of bacterial behavior in air is brought forward.

FROM THE AUTHORS' SUMMARY

HUMAN INFECTION CAUSED BY A YEAST-LIKE ORGANISM OF GENUS *SEPEDONIUM* G H HANSMANN and J R SCHENKEN, *Am J Path* 10 731, 1934

In lesions of the skin and in the lymph nodes a yeastlike organism was found, which was isolated in pure culture, and in which large spiculated chlamydospores developed on lateral branches of a delicate mycelium. This appears to be the first case of its kind.

EFFECTS OF VACCINES AND OF BACTERIAL AND PARASITIC INFECTIONS ON EOSINOPHILIA IN TRICHINOUS ANIMALS WESLEY W SPINK, Arch Int Med **54** 805, 1934

The number of circulating eosinophilic leukocytes in animals infected with *Trichinella spiralis* was reduced following infection with *Bacillus tuberculosis*, *Staphylococcus aureus* and *Trypanosoma equiperdum*. Animals which had received repeated injections of typhoid vaccine responded with a rise in the number of eosinophilic leukocytes. No change was noted following the injection of heat-killed tubercle bacilli. Studies of the bone marrow from the same animals did not reveal a corresponding decrease in the number of eosinophilic cells. Trichinous animals having a superimposed tuberculosis or trypanosomiasis had less reaction around the encysted parasites in the muscle than the control animals. Trichinous animals inoculated with typhoid vaccine showed similar changes in the muscles. Trichinous animals subjected to a high degree of dry heat responded with an absolute rise in the number of circulating eosinophilic leukocytes. No relationship was found between the weight of an animal and the level of eosinophilic leukocytes in its peripheral blood. The number of circulating eosinophilic cells did not appear to be related to the mode of encystment of *Trichinella spiralis* in the muscle.

AUTHOR'S SUMMARY

ETIOLOGY OF THE 1933 EPIDEMIC OF ENCEPHALITIS R S MUCKENFUSS, C ARMSTRONG and L T WEBSTER, J A M A **103** 731, 1934

A number of strains of a virus that seems to have been the etiologic agent of the 1933 epidemic of encephalitis were isolated in two different laboratories. This virus acts on monkeys and white mice and is distinct from previously known viruses. The number of strains of similar characteristics isolated and the neutralization of the virus by the serum of persons convalescent from encephalitis in this epidemic, but not by the serum of persons recovered from other diseases, justify the conclusion that it was the etiologic agent of the recent epidemic.

INHALED SILICA AND ITS EFFECT ON NORMAL AND TUBERCULOUS LUNGS L U GARDNER, J A M A **103** 743, 1934

Dusts containing silica are preeminently dangerous. Present knowledge will not permit it to be said that only free silica is harmful, possibly some of the silicates will also be incriminated. One silicate, asbestos, produces a characteristic and dangerous type of pulmonary fibrosis. Silica is a poison to the tissues. In low dilutions it causes nodular fibrosis, in higher concentrations it produces rapid necrosis of cells of all kinds. Human silicosis begins by damaging the pulmonary lymphatic apparatus and progresses by the development of nodular fibrosis of the parenchyma of the lungs. Silicosis specifically predisposes to infection with the tubercle bacillus. The mechanism of this action has not yet been determined. It probably consists in some alteration in the soil rather than in changes induced in the infecting organism. Nonsiliceous dusts inhaled in combination with silica modify the action of the latter, altering the anatomic characteristics of the lesions and apparently decreasing the susceptibility to tuberculosis.

FROM THE AUTHOR'S SUMMARY

THE ST LOUIS TYPE OF ENCEPHALITIS H A MCCORDOCK, W COLLIER and S H GRAY, J A M A **103** 822, 1934

The essential pathologic process in the St Louis type of encephalitis is a nonsuppurative inflammation of the nervous system characterized by intense vascular congestion, cellular infiltration and degenerative changes in the nerve cells. Severe examples of the disease which closely resemble the Japanese type B can readily be distinguished from the lethargic type, although the milder cases cannot be differentiated from the latter on the basis of the pathologic lesions alone.

FROM THE AUTHORS' SUMMARY



A PARTIAL PURIFICATION OF YELLOW FEVER VIRUS THROUGH ADSORPTION AND ELUTION T P HUGHES, *J Bact* **28** 401, 1934

Preparations of yellow fever virus have been made possessing a high degree of activity and having a protein content at least fifty times less than can be demonstrated by chemical tests for protein. The method used is that of adsorption on kaolin followed by selective elution with dilute ammonia. This partial purification can be accomplished with ease and rapidity. FROM THE AUTHOR'S SUMMARY

THE VIRUS OF BRILL'S DISEASE. S R SAVOOR and R VELASCO, *J Exper Med* **60** 317, 1934

The experiments described have confirmed the observations of Laigret and Jadin that the virus of the European human typhus cannot be maintained for more than two generations in mice by brain-peritoneum passage, whereas the murine Mexican variety can be carried on by this method in mice through at least eleven passage generations. The fact that within eleven passages there is no attenuation of the murine virus renders it likely that this agent can continue in mice in an unapparent form without material modification. The virus of Brill's disease from three different isolations has behaved like the European type, a fact which strengthens the opinion previously expressed in articles from this laboratory that Brill's disease represents an imported strain of the classic European infection.

FROM THE AUTHORS' SUMMARY

SPONTANEOUS CONJUNCTIVAL FOLLICULOSIS. P K OLITSKY, J T SYVERTON and J R TYLER, *J Exper Med* **60** 375, 1934

It appears that in three types, at least, of follicular reactions in the conjunctiva—that in man (the primary lesion of trachoma consisting essentially of follicles), that in the simian and that in the rabbit—there is an intimate association of micro-organisms having the same generic but different specific properties.

FROM THE AUTHORS' SUMMARY

WHOOPING COUGH TYPE-SPECIFIC (S) AND DISSOCIATION (R) FORMS OF *HEMOPHILUS PERTUSSIS*. G S SHIBLEY and H HOELSCHER, *J Exper Med* **60** 403, 1934

Fifty-nine recently isolated strains of *Haemophilus pertussis* and thirty-nine from laboratory stock have been studied with respect to their cultural, morphologic, toxic, serologic and cataphoretic properties. The recently isolated strains, whether derived from cases of whooping cough in Europe or in this country, are all of a single specific serologic type which should be designated as the S form of *H. pertussis*. Criteria for the identification of the S form are given. The S form may be maintained in this stage by suitable cultural methods. If grown on mediums deficient in blood, it will dissociate into an antigenically different form, which should be designated the R form in keeping with the current terminology employed in describing bacterial dissociants. FROM THE AUTHORS' SUMMARY

BIOLOGIC STUDIES OF THE TUBERCLE BACILLUS. W STEENKEN JR, W H OATWAY JR and S A PITROFF, *J Exper Med* **60** 515, 1934

The H<sub>27</sub> strain of human tubercle bacillus has been dissociated into two variants the R, or avirulent, and the S, or virulent. When their dissociation is complete, the colony morphology of each is distinctive and typical. The morphology of the individual bacilli of the two variants is different and characteristic. The R variant develops best in an acid medium the S, in an alkaline medium. A method of assortment to facilitate the procedure of forced dissociation has been described. The difference in virulence has been proved by observations on the pathogenesis of the variants.

FROM THE AUTHORS' SUMMARY

THE PROTECTION OF COPPLR AGAINST *TRYPANOSOMA EQUIPERDUM* IN RATS  
D PERLA, J Exper Med 60 541, 1934

Copper in amounts equivalent to 0.2 mg of elemental copper per rat per day during a period of ten days prior to induced infection with small numbers of trypanosomes raised the natural resistance of the rats to the infection. The infection was aborted in all instances when the rats were infected by the injection of 2,000 trypanosomes and in 75 per cent of instances when the rats were infected by the injection of 10,000 trypanosomes. FROM THE AUTHOR'S SUMMARY

THE MECHANISM OF INVASIVENESS OF STREPTOCOCCI E W DEANIS and D  
BERBERIAN, J Exper Med 60 581, 1934

Menkin's observations of the failure of inflammatory fixation in areas of acute inflammation due to *Streptococcus haemolyticus* have been confirmed. The lack of inflammatory fixation in the presence of streptococci is not due to the passive nature of these organisms, but may be attributed to the production of (1) fibrinolytic and (2) antifibrinogenic substances which dissolve the fibrin barrier or prevent its formation, thus maintaining the patency of the lymphatics and capillaries and facilitating the dissemination of the organisms. The production of fibrinolytic or antifibrinogenic substances and the invasiveness of a given strain of *Streptococcus* are correlative. Both substances are relatively thermostable. Fibrinolysin is destroyed if held at 100 C for one hour. The antifibrinogenic substance is weakened but is not destroyed under the same conditions. There is evidence that both substances are antigenic, and that they exhibit some degree of type specificity. The rôle of fibrinolysin and that of the antifibrinogenic factor in the invasion of the tissues by streptococci are discussed. FROM THE AUTHORS' SUMMARY

DISSOCIATION OF STREPTOCOCCI FROM ACUTE RHEUMATIC FEVER K M HOWELL  
and E P BURTON, J Infect Dis 55 79, 1934

Four strains of streptococci freshly isolated by blood cultures from patients with acute rheumatic fever remained virulent and smooth for eight months in spite of efforts to incite dissociation by chemical and physical means and by inoculation into animals. Elements of dissociation in the strains are suggested by pleomorphism and by occasional S-R colonies. The experiments with animals suggest little possibility of changing a smooth virulent strain to a rough avirulent strain in vivo. Accepting the definition that dissociation is a permanent change that takes place in a bacterium and is then transmitted to subsequent generations, we have so far been unable to dissociate the four strains of streptococci obtained by blood culture from patients with acute rheumatic fever.

FROM THE AUTHORS' CONCLUSIONS

DIPHTHERIA BACILLI CULTURAL AND TOXIGENIC CHARACTERISTICS L W  
SMITH, M E SANO and J J JAREMA, J Infect Dis 55 105, 1934

The incidence of toxic cultures in carriers of different types has been presented, scarlet fever carriers having the greatest percentage. The persistence of toxicity in carrier strains and the uselessness of repeated tests in these cases is commented on. No relation between the formation of a pellicle and toxicity has been found. No relationship between toxicity and hemolysis has been observed. Of thirty different strains none was found to be soluble in bile. The morphology of the bacillus and the toxicity did not seem to show more than a suggestive relationship. The presence of a coccoid form in Berkefeld "N" filtrates after incubation was observed. Histologic examination of the tissues of guinea-pigs utilized in this study showed a fairly uniform tendency to lymphoid hyperplasia and germinal center lymphoid necrosis in the animals given the toxic strains, relatively no changes were observed in those given the nontoxic strains.

FROM THE AUTHORS' SUMMARY

A BIOLOGIC CLASSIFICATION OF THE BACILLUS OF RHINOSCLEROMA M C MORRIS  
and L A JULIANELLE, J Infect Dis 55 150, 1934

A study of the biologic and immunologic reactions of ten strains of the bacillus of rhinoscleroma has been made. All these strains exhibited an inability to form indole or to liquefy gelatin, but all were able to reduce nitrates. The Voges-Proskauer and methyl red tests were found to be of no value for diagnosis or classification. The fermentation reactions were characterized by absence of gas. The sugars fermented were dextrose, maltose and mannitol, and in three instances there was a delayed formation of acid in sucrose. Lactose was not fermented, and litmus milk showed no gross changes. None of the strains was virulent for white mice. The agglutination reactions demonstrated the serologic unity of the strains of the bacillus of rhinoscleroma and its antigenic similarity to type C of Friedlander's bacillus. By agglutinin adsorption it was shown that both organisms have identical serologic specificity.

FROM THE AUTHORS' SUMMARY

PSITTACOSIS AMONG THE PERSONNEL OF THE HYGIENIC LABORATORY G W  
McCoy, J Infect Dis 55 156, 1934

The epidemiological features in association with eleven cases of psittacosis occurring among the personnel of a research laboratory are described. Two of the eleven persons infected were in direct contact with infected birds. While the ultimate source of the infection of the other nine persons probably was infected birds, the means of transmission of the disease were not determined. It seems to be established that person-to-person infection did not occur.

FROM THE AUTHOR'S SUMMARY

INSTITUTIONAL AND OCCUPATIONAL UNDULANT FEVER IN COLORADO I C HALL  
and R LEARMONTH, J Infect Dis 55 184, 1934

Whenever possible, tests on both the blood serum and the milk serum should be made to detect agglutinins for *Bacterium melitensis* (or *Bacterium abortus*) in dairy cattle. Tests of blood serum are superior to tests of milk serum. Undulant fever is transmitted most commonly, first, through handling infected meat in slaughter houses and, second, through drinking raw milk from infected dairy cattle. All the milk should be pasteurized to protect the inmates of institutions against contracting undulant fever from cows harboring abortion disease. Meat inspectors run a much greater risk of contracting this fever than do employees in hog cholera serum plants.

FROM THE AUTHORS' SUMMARY

EXAMINATION OF CHILDREN WITH INFECTION OF THE UPPER RESPIRATORY TRACT  
FOR BACILLUS PERTUSSIS BY THE COUGH DROPLET METHOD H L WILCOX,  
J Infect Dis 55 199, 1934

The inability to isolate the pertussis bacillus by the cough droplet method in patients with infections of the upper respiratory tract other than whooping cough, the negative results obtained by other investigators from cultures of material from the nasopharynx and larynx of persons not in contact with whooping cough and the negative pulmonary and laryngeal cultures made postmortem on children who died from various other causes add to the view that the pertussis bacillus is found only in persons who have or who have had whooping cough and in those who have been in contact with the disease.

FROM THE AUTHOR'S SUMMARY

DIFFERENTIATION OF STREPTOCOCCUS EPIDEMICUS I PILOT, J Infect Dis 55 228,  
1934

Mucoid encapsulated organisms of the *Streptococcus-Pneumococcus* group can be differentiated into *Streptococcus epidemicus*, *Streptococcus Mathersi* and *Pneumococcus mucosus*. These strains may be mucoid variants of *Streptococcus haemo-*

lyticus, *Streptococcus viridans* and *Pneumococcus Str epidemicus* appears to be the only organism identified with milk-borne epidemics of septic sore throat, Mathers' coccus appears during epidemic or pandemic influenza. Mucoid strains of the *Streptococcus* group apparently are important factors in the genesis of epidemic diseases.

FROM THE AUTHOR'S SUMMARY

A SURVEY OF WORKERS IN PACKING PLANTS FOR EVIDENCE OF BRUCELLA INFECTION  
L. HLATHMAN, *J Infect Dis* 55 243, 1934

While experience has shown that the agglutination test is a valuable diagnostic aid to the clinician, the data presented point clearly to the necessity for interpreting the laboratory findings in the light of a full history and the clinical signs and symptoms. The findings in this study, together with the observations on the incidence of the allergic state in well persons without a history of undulant fever or known exposure to brucella infection, cited in this paper, lead to the conclusion that the intradermal test is of little value as a diagnostic aid. In dealing with persons exposed to brucella infection, the greatest care must be exercised in the interpretation of both the positive agglutination and the positive intradermal test.

PARATYPHOID B IN WESTERN NORWAY T. M. VOGELIANG, *J Infect Dis* 55 276, 1934

Investigation of 208 strains of *Bacillus paratyphosus* B from 100 patients with paratyphoid fever, type B, has yielded the following results. *B. paratyphosus* B occurs in different cultural forms. During the illness and the stage of convalescence the S form alone is found, while the R form, mixed as a rule with the S form, is observed in persons who have been excreting the organisms over a comparatively long period. *B. paratyphosus* B constitutes a special type among the bacteria of the *Salmonella* group, with definite cultural and biologic qualities, viz., "slime wall" formation at room temperature, formation of papillae on raffinose agar, formation of hydrogen sulphide in lead acetate agar, a negative Bitter reaction, a negative Pesch-Maschke reaction, and decolorization of neutral red agar. The dextro-tartrate test is valuable in the differentiation of *B. paratyphosus* B (which is "tartrate-negative") from the closely related humanopathogenic "tartrate-positive" types of *Salmonella*. *B. paratyphosus* B ferments the same sugars and polyvalent alcohols as the closely related humanopathogenic types of *Salmonella*, with formation of acid and gas. According to the time taken to ferment inositol and rhamnose, *B. paratyphosus* B can be divided into several types, which appear to be so constant in their occurrence in the individual patient and in any one epidemic as to be of practical significance in epidemiological inquiries. In its serologic manifestations *B. paratyphosus* B constitutes a definite diphasic type of *Salmonella*. It has both a heat-stable O antigen and a heat-labile nonspecific H antigen in common with several other types of *Salmonella*, while none of the other known types contains the heat-labile specific H antigen peculiar to it. The change of the S form to the R form is accompanied by an alteration in the O antigen, while the H antigens remain unaltered. *B. paratyphosus* B gives rise to a typhoidal clinical picture which cannot be differentiated by the clinical manifestations alone from typhoid. In a few patients the illness had an acute onset but gradually passed into a condition resembling typhoid. In no instance did the illness throughout its entire course behave like acute gastro-enteritis. In most cases the intestinal ulceration involves mainly the colon (colityphoid). Broadly speaking, each of the two diseases, paratyphoid B and typhoid has its own area of distribution in western Norway. While both diseases previously showed a wide dissemination, it has been possible during the last ten years to produce a more or less regular decline in their incidence. The sources and paths of infection are of the same nature in both diseases. Chronic carriers are the source of greatest moment, and under the present conditions milk furnishes the main path of infection. The same preventive regulations have been shown to be effective against both diseases. Disease among animals is not observed in association with paratyphoid B in man. Paratyphoid B

is transmitted directly or indirectly from person to person and appears to be as specific a disease in man as typhoid. Other primary sources of infection, the subject of scientific argument, have not been established with certainty.

FROM THE AUTHOR'S SUMMARY

RELATIONSHIP OF THE MORPHOLOGY OF THE DIPHTHERIA BACILLUS TO ITS VIRULENCE J J JAREMA and L W SMITH, *J Infect Dis* **55** 306, 1934

During the routine examination of 592 nose and throat cultures for virulent diphtheria bacilli, observations were made which show a decided relationship between morphology and virulence in these organisms. A greater percentage of virulence was shown by mixed cultures than by cultures of pure types. Cultures that were of the BT type, that is, bacilli which showed a tendency to bulge at one or both poles or anywhere along the body, were always found by inoculation into animals to be virulent. Fifty-nine per cent of the virulent strains were of the BT type. Elimination of the inoculation of the BT type into animals would result in a saving of time and material. A clinical correlation was found between the presence of the BT type and the severity of the disease. Repeated virulence tests on cultures from diphtheria carriers and from patients with clinical diphtheria showed a definite relationship between the morphology and the virulence of the diphtheria organism.

FROM THE AUTHORS' SUMMARY

EXPERIMENTAL SUMATRAN MITE FEVER IN GUINEA-PIGS W KOUWENAAR and J W WOLFF, *J Infect Dis* **55** 315, 1934

Monkeys, rabbits and guinea-pigs were inoculated with material containing the virus of Sumatran mite fever. A high percentage of the monkeys reacted to intradermal inoculation with a primary papule, swelling of the lymphatic glands, fever, leukopenia and relative lymphocytosis, and the blood gave a positive Weil-Felix reaction with *Bacillus proteus* X Kingsbury. In rabbits, after intratesticular infection a specific orchitis developed, after intra-ocular infection, a specific keratitis and iridocyclitis occurred occasionally in guinea-pigs, after intraperitoneal or intratesticular infection, a disease developed characterized by loss of weight, occasional fever, high infiltration of the omentum and parietal peritoneum by histiocytes, hemorrhagic edema of the polar fat body of the testicle, interstitial infiltration of the testicle, tunica vaginalis and cremasteric muscle, swelling of the suprarenal and lymphatic glands, transitory swelling of the spleen and sometimes infiltrations of the brain. The disease could be transmitted from man to monkeys, rabbits and guinea-pigs, and from each of these animals to the others. Rickettsiae were found in monkeys, rabbits and guinea-pigs. Mite fever seems to differ from tsutsugamushi disease, *fièvre boutomaise* and South African tick fever. Mite fever is closely related to, or is perhaps identical with, the scrub variety of tropical typhus.

FROM THE AUTHORS' SUMMARY

EXPERIMENTAL FUSO-SPIROCHAETAL INFECTION IN GUINEA PIGS H O PROSKE, *Pub Health Rep* **49** 1212, 1934

Fusospirochaetal lesions comparable with those occurring in man may be caused by the symbiotic action of *Treponema microdentium* or *mucosum*, *Bacillus fusiformis* serologic type I subtype 2, or type II (Varney), an anaerobic anhemolytic streptococcus and *Vibrio viridans*. Original cultures were taken from miners with silicosis who had pulmonary abscess and chronic bronchiectasis. *Treponema macrodentium*, *Treponema buccale*, *Spirillum sputigenum* and a larger fusiform bacillus growing together with a spirochete resembling *Treponema Vincenti* take no part in the symbiotic action. The anaerobic streptococcus and the vibrio, by virtue of their mild but definite pathogenic properties, appear to render the tissues susceptible to the destructive action of the other types of organisms. This experimental study furnishes evidence in support of a conclusion of D T Smith (*J Infect Dis* **46**

303, 1930) that pulmonary lesions may be caused by a symbiosis of a spirochete, a fusiform bacillus, a vibrio and a coccus. Further investigations are indicated as to whether any pathogenic organisms (anaerobic or aerobic) of the upper respiratory tract may replace one or the other of the members of the harmful symbiotic group just described.

FROM THE AUTHOR'S SUMMARY

PSITTACOSIS IN THE POCKET GOPHER R. D. LILIE, *Pub Health Rep* **49** 1419, 1934

Gophers inoculated with the virus of psittacosis, to which they are quite susceptible, present a fairly consistent and characteristic pathologic picture in the liver, focal fibrinocaseous necrosis, isolated coagulated cells, occasional small coagulation necroses and slight swelling of Kupffer cells, in the spleen, widespread fibrinous thrombosis of the pulp, accompanied by karyorrhexis in the tissue cells, grading into caseous necrosis, in the lungs of some animals, congestion, hemorrhage and edema, in the heart muscle and kidneys, cloudy swelling.

FROM THE AUTHOR'S SUMMARY

THE DEVELOPMENTAL FORMS OF PSITTACOSIS VIRUS S. P. BRIDSON and J. O. W. BLAND, *Brit J Exper Path* **15** 243, 1934

The apparently homogenous masses seen in the early stages of the multiplication of the virus of psittacosis are particulate.

FROM THE AUTHORS' SUMMARY

VARIATION IN THE PNEUMOCOCCUS M. H. DAWSON, *J Path & Bact* **39** 323, 1934

A new and distinct variant of *Pneumococcus* is described. The place of the new variant in the general phenomenon of bacterial variation is indicated. A change in the currently accepted nomenclature of variant forms of *Pneumococcus* is suggested to conform with that now employed to describe corresponding variant forms of other bacterial species. In accordance with this change it is proposed that the three chief variants of *Pneumococcus* shall be designated by the terms M (mucoid), S (smooth) and R (rough). Various stages in the  $S \rightarrow R$  and  $R \rightarrow S$  variations (new terminology) of *Pneumococcus* are described. Morphologic evidence is presented which suggests that these variations may be cyclic.

FROM THE AUTHOR'S SUMMARY

THE PORTAL OF ENTRY OF BACTERIA AND THE PRODUCTION OF INTESTINAL INFECTION F. H. TALE, *J Path & Bact* **39**.391, 1934

The buccopharyngeal mucous membrane is permeable to bacteria without previous injury. The normal gastric juice is germicidal in proportion to the percentage of the physiologically active hydrochloric acid. The normal intestinal mucosa is practically impermeable to bacteria along its whole length. The mucous membrane of the whole length of the alimentary canal acts as a channel by which bacteria are excreted from the body. Intestinal disease may occur as the result of oral infection through the buccopharyngeal mucosa, extension to the regional lymphatic glands and spread by the blood stream to the intestinal mucosa. In some cases the infection may be primarily enteral, something having occurred which altered the permeability of the epithelium and glands so that they allow bacteria which have escaped the germicidal activity of the gastric juice to invade the mucosa. Enterotropism is really only a clinical manifestation depending on the resistance of the intestinal mucosa to the bacterium. All bacteria are enterotropic in that they are passed from the tissues into the lumen of the intestine, but the occurrence of intestinal symptoms depends on the virulence of the bacterium relative to the resistance of local tissue. The self-sterilization of the alimentary tract is not due to any germicidal secretion by the intestinal mucosa but is due simply to the competitive action of the normal intestinal flora.

FROM THE AUTHOR'S CONCLUSIONS

THE PLEUROPNEUMONIA AND AGALACTIA COLONY E KLIENEGER, J Path & Bact 39 409, 1934

By the aid of a modified agar-fixation method it has been possible to unravel the structure of the pleuropneumonia and agalactia colony at all stages of growth. Study of the fixed and stained colonies reveals a mode of development and a resultant structure agreeing in all essential features with those postulated by Ledingham in his study of impression preparations. The life cycle of these organisms appears to be essentially simple, despite the obvious polymorphism of the constituent elements. Further search for possibly saprophytic homologs must be made before attempting to assign to them generic rank in the family of Actinomycetaceae in which Ledingham proposes to enrol them. In a study of the influence of varying conditions of growth on morphologic structure it has been found that lithium salts incorporated in the medium cause remarkable alterations in the size and shape of the pleuropneumonia and agalactia "bodies" not unlike the changes incurred by bacteria under similar influences.

FROM THE AUTHOR'S SUMMARY

HAEMOLYTIC STREPTOCOCCI FROM THE VAGINA OF FEBRILE AND AFEBRILE PARTURIENT WOMEN R HARE and L COLEBROOK, J Path & Bact 39 429, 1934

Only a minority of the strains of hemolytic streptococci from the vagina of afebrile parturient women give the same biochemical reactions as those from patients with definite infections. The majority of the saprophytic strains are probably of the same type as that which causes a large proportion of cases of bovine mastitis. A proportion of mild puerperal infections are probably due to such bovine strains.

FROM THE AUTHORS' CONCLUSIONS

TYPES OF CORYNEBACTERIUM DIPHTHERIAE D T ROBINSON, J Path & Bact 39 551, 1934

In stock subcultures typical strains of *Corynebacterium diphtheriae* in Manchester, England, showed marked stability, but by special in vitro methods it was possible to obtain variation in most of the type characters. In respect to gravis strains starch fermentation was not perfectly stable, but appeared to be more so than colony form. By agglutination there was no distinction between the "smooth" and "rough" colonies of gravis. Animal passage also revealed a high degree of type stability. One instance of apparent complete change of type by means of papilla formation was observed. Some atypical strains may show marked instability both in vivo and in vitro. The appearance of mixed types in primary cultures and in cultures from convalescents in the hospital is due, in the vast majority of cases, to cross-infection and not to variation. In areas where the disease is severe or where an epidemic strain is prevalent the classification into gravis, mitis and "intermediate" types is straightforward. Atypical strains and difficulties in classification are much more frequent in areas where the disease is mild and where none of the types has an epidemic distribution. Reversal of the reaction in broth and hemolysis are not valuable as criteria for the classification of gravis and mitis strains, but "intermediate" strains apparently never hemolyze and never cause reversal of the reaction in broth.

FROM THE AUTHOR'S SUMMARY

CORYNEBACTERIUM OVIS, CORYNEBACTERIUM DIPHTHERIAE AND CERTAIN DIPHTHEROID STRAINS G F PETRIE and D McCLEAN, J Path & Bact 39 635, 1934

There is no relationship between the specific toxins that are present in filtrates of both cultures of *C. ovis* and *C. diphtheriae*. An examination of the toxin-antitoxin relations of *C. diphtheriae*, Mair's aberrant strain of *C. diphtheriae*, the group of aberrant diphtheroid strains described by Barratt and *C. ovis* has shown that these strains possess characters which link them together. The strain discovered by Mair occupies a key position in the group because it has an affinity not only to the typical *C. diphtheriae* but to *C. ovis* and to the aberrant diphtheroid strains of Barratt.

FROM THE AUTHORS' SUMMARY

CARBOHYDRATE AND NUCLEOPROTEIN FRACTIONS OF BRUCELLA L E TOPPING,  
J Path & Bact **39** 665, 1934

The results recorded indicate that *Brucella abortus* contains, in addition to a nontype-specific nucleoprotein fraction similar to that described by Huddleson (1933), a carbohydrate which precipitates with *Br abortus* and *B melitensis* antisera

### Immunology

HETEROPHILIC ANTIGEN IN VARIOUS BACTERIAL SPECIES MARY SHAW SHORR  
and G HOWARD BAILEY, Am J Hyg **19** 148, 1934

Fourteen bacterial species were proved to contain heterophilic (Forssman) antigen by their stimulation of the development of antiserum hemolysis in rabbits and by absorption experiments. The highest titers were obtained by *Neisseria catarrhalis* and *Streptococcus viridans*. The heterophilic nature of the antigen in the bacteria and of the antibodies in the immune sera was determined by all known methods. Only three of the bacterial species produced antisera which agglutinated sheep cells, while all produced antisera that hemolyzed them. Human red blood cells of group A were agglutinated by all but one of the bacterial heterophilic immune sera, while none of the sera was able to hemolyze human blood corpuscles. Similar variations were observed with regard to the ability of the antisera to produce toxic cutaneous reactions in guinea-pigs and with regard to the ability of the bacteria to absorb the antibodies from the different antisera. The antigenic properties of alcoholic extracts of the bacteria were lower than those of the intact bacteria or of their aqueous solutions. According to Shorr and Bailey, the presence of heterophilic antigens in such widely distributed bacterial species as *N catarrhalis*, *Diplococcus pneumoniae*, *Clostridium Welchii* and *Alcaligenes faecalis* may explain the origin of normal antiserum hemolysis. Many bacterial species, among them important pathogens, were found not to contain heterophilic antigen

I DAVIDSON

THE TRYPANOCIDAL ACTION OF NORMAL HUMAN SERUM J T CULBERTSON and  
P S STRONG, Am J Hyg **21** 1, 1935

Because the substance in fresh human serum responsible for the trypanocidal effect is relatively thermostable, is able to pass through a Berkefeld filter, and is absorbable from the serum by trypanosomes as well as by certain species of bacteria it is postulated that the substance is a relatively nonspecific antibody, perhaps similar to the substance responsible for bactericidal activity

THE TRYPANOCIDAL POWER OF NORMAL HUMAN SERUM B J HANDLER, Am J  
Hyg **21** 18, 1935

The results reported may be taken to indicate that the trypanocidal agent in normal human serum is capable of producing an equivalent antibody, or else that its function is closely associated with some antigenic factor. When sufficient antiserum prepared against unheated human serum is added to normal human serum in vitro, neither the supernatant fluid nor the precipitate displays any trypanocidal activity. However, when an antiserum prepared against heated human serum is used under similar conditions, the trypanocidal power of the supernatant fluid is not diminished. Similarly, an antagonistic effect in vivo could be elicited only with antiserum obtained by immunization with unheated human serum. The inability of earlier observers to demonstrate that antihuman serum has an inhibitory effect on the trypanocidal principle of normal human serum is probably best explained on the basis of improper proportions or a lack of potency



THE ANTIBODY RESPONSE OF RABBITS TO TYPE I PNEUMOCOCCUS VACCINES L A BARNES and B WHITE, *Am J Hyg* **21** 35, 1935

The evidence taken as a whole suggests that the following factors are involved in producing in rabbits highly protective type I antipneumococcic serum (a) preliminary stimulations with gradually increasing amounts of vaccine until the optimum amounts are reached, (b) after the "holding dosages" are reached, the alternation of relatively long rest periods with repeated secondary stimulations, and (c) the allowance of a sufficient length of time. Similar procedures are being applied in the routine immunization of horses for the production of therapeutic antipneumococcic serums.

FROM THE AUTHORS' SUMMARY

ARTIFICIAL IMMUNIZATION OF RATS AGAINST TRICHINELLA SPIRALIS O R MCCOY, *Am J M Sc* **21** 200, 1935

The majority of rats given six intraperitoneal injections of living, heat-killed or dried and powdered larvae at five day intervals developed some degree of immunity against a subsequent light infection with *Trichinella spiralis*. The degree of immunity varied from none to practically complete. The living larvae were usually more effective in establishing immunity than either the heat-killed or the dried and powdered larvae. Artificially immunized rats showed little or no resistance to the initial development of adult worms in the intestine, but the worms were lost more rapidly than in control animals. This would result in a smaller amount of muscle invasion in the immunized rats. The immune state produced by the injections is apparently of the same general nature as that brought about by infection, in each instance the mechanism is directed against the intestinal stages of the parasite. The former immunity, however, is not nearly so potent as the latter and is much more easily broken down by large doses of larvae.

FROM THE AUTHOR'S SUMMARY

THE TIME INTERVAL BETWEEN PRIMARY INFECTION AND SUPERINFECTION AS A FACTOR IN IMMUNITY TO TUBERCULOSIS HENRY SEWALL, EUGENE DE SAVITSCH and CHARLES P BUTLER, *Am Rev Tuberc* **29** 373, 1934

The results of studies in guinea-pigs furnish evidence that superinfection (a term adopted as less subject to criticism than that of reinfection) has the power, under certain circumstances, not only to increase fibrosis and aid in the segregation of foci of infection, but also to stimulate actively the resistance to the implantation of fresh bacilli, if not, indeed, to cause the absorption of foci of disease already formed. The results point to a single variable as of paramount importance in achieving resistance (immunity within the host), namely, the interval of time between infection and superinfection. The data suggest certain steps in the development of immunity. Among the factors concerned is a specific hypersensitiveness of the body tissues toward the antigen, which is foreign and presumably injurious to the invaded host. The evidence stresses the importance of the time element in the development of tissue immunity. At a certain period after infection the violence of the local reaction to reinfection begins to diminish steadily, on the other hand, the general stability of the reacting host—his power of adaptation and restoration, that is, immunity—at the same time increases. The local inflammation and other manifestations caused by superinfection at fifty-three days denote allergy. At this period the whole body probably shares the allergic state. On withholding superinfection for stated periods, allergy diminishes but immunity increases. Far from stigmatizing allergy as indifferent or antagonistic to the development of immunity, Sewall, de Savitsch and Butler take the view that it represents crude vital energy specifically excited and capable of adaptation to the protection of the host, whose tissues are trained by stimulation of the antigen which first aroused them. Sewall (*Nat Tuberc A Tr* **28** 84, 1932) classified the conditions of combat between the host and the pathogen under three heads (1) a host-defensive mechanism so perfect that the invader is destroyed without disturbance

—perfect immunity, (2) a virulence of the pathogen so overwhelming that the host quickly succumbs—defenseless susceptibility, (3) the two contestants approximately equal, so that the outcome of the struggle depends on the relative allergic resources of the combatants, the allergic reaction becoming less acute in proportion as one or the other prevails

H J CORPER

IMMUNIZATION OF THE UPPER RESPIRATORY TRACT T E WALSH and P R. CANNON, Arch Otolaryng **20** 820, 1934

Repeated intranasal instillations of vaccines prepared from *Bacterium paratyphosum* B or *Bacterium typhosum* caused the development of specific agglutinins in the various organs and in the blood of the treated animal. Simultaneous titration of different tissues of a perfused animal revealed that the agglutinin content of the nasal tissues was usually higher than that of any other organ tested, but lower than that of the blood serum. Agglutinins in the nasal tissues were demonstrable in fairly high dilution only after intranasal instillation of the vaccine for at least six days, the highest titers being in animals treated daily for from nine to thirteen days with extraction and titration of the tissues from five to seven days after the last vaccination. The repeated intranasal application of these vaccines caused structural changes in the subepithelial tissues, with an accumulation of leukocytes, macrophages and mononuclear cells, and hyperplasia of the lymphoid tissues. The agglutinin content of the nasal tissues in a few instances was higher than that of the blood serum or of other tissues of the same animal, suggesting that the antibody formed locally in the region of vaccination. Nonspecific stimulation of the nasal tissues of rabbits immunized subcutaneously and possessed of a high titer of the agglutinins of the blood serum did not lead to as high titers of the agglutinins of the extracted nasal tissues as was usually the case after intranasal vaccination. Living bacteria instilled into the nostrils did not enter the blood stream in detectable numbers within an hour, thus demonstrating the barrier action of nasal and nasopharyngeal epithelium. A solution of trypan blue instilled into the nostrils entered the lungs directly by way of the trachea. The experiments support the notion that local intranasal vaccination may lead to local concentration of specific agglutinins in the nasal tissues and mobilization of leukocytes and macrophages in the subepithelial tissues of the upper respiratory tract. They also furnish evidence for the view that these agglutinins are, at least in part, formed locally. Complete proof of this point is still lacking. The conclusion is drawn that local immunization by mobilizing macrophages and by favoring the formation or concentration of specific antibody in the region of vaccination should enhance the resistance of such tissues against similar living bacteria.

FROM THE AUTHORS' SUMMARY

IS THERE A SCARLET FEVER TOXOID? G F DICK and G H DICK, J A M A **103** 1362, 1934

Scarlet fever toxin is partially but not completely detoxified by treatment with solutions of formaldehyde up to 1 per cent. The presence of unaltered toxin in the formaldehydized preparation is sufficient to account for the immunity obtained. No evidence now available justifies the assumption that there is a scarlet fever toxoid analogous to diphtheria toxoid. Alum precipitates diphtheria toxin, and the toxin may be demonstrated in the precipitate, but the redissolved alum precipitate from scarlet fever toxin showed no evidence of the presence of toxin. The rabbit is not a suitable subject for standardization of scarlet fever toxin. Since the detoxified portion of scarlet fever toxin that has been treated with dilute solution of formaldehyde is not antigenic, it is inferior to unmodified toxin as an immunizing agent because of the unnecessary amount of useless foreign protein which it contains.

FROM THE AUTHORS' SUMMARY

ANTIBODY RESPONSES IN INFECTIOUS MONONUCLEOSIS ALAN BERNSTEIN, *J Clin Investigation* **13** 419, 1934

Bernstein tested the serums of 300 patients for the presence of agglutinins for sheep red corpuscles. Among the patients were (a) 29 with different clinical conditions the clinical features of which were similar to those of infectious mononucleosis, (b) patients with conditions which are associated with bacterial agglutination reactions (typhoid and paratyphoid fever, dysentery, etc.), (c) patients with various blood dyscrasias. Over 95 per cent had a titer of 1/8 or less, and none a titer higher than 1/16 (with Davidsohn's first method of agglutination of sheep red corpuscles). In 18 patients who had been treated with horse serum, the titer was regularly elevated (the highest was 1/512). Of 15 patients with clinical features of infectious mononucleosis, 13 had moderately to markedly elevated titers of agglutinins for sheep cells (varying from 1/32 to 1/4,096), in 2 patients the titers were normal. In some of the cases, the increase of the antibodies preceded the appearance of abnormal blood findings (in 1 case by four days). Two cases with unusual features are described, in one of them there was a high titer of agglutinins for sheep cells and, in addition, there was an elevation of the titer of agglutinins for various bacteria of the typhoid and paratyphoid groups. The patient had received typhoid vaccine for over a year previous to the last illness. The other patient had the findings of a purpura and a marked elevation of the titer of heterophilic antibodies. Bernstein considers the conditions observed in both cases as being due to infectious mononucleosis, possibly in association with other disorders. In two cases a transient positive Wassermann reaction was observed.

I DAVIDSOHN

THE DIAGNOSTIC IMPORTANCE OF THE HETEROPHILE ANTIBODY TEST IN LEUKEMIA ALAN BERNSTEIN, *J Clin Investigation* **13** 677, 1934

Bernstein found that in twenty of twenty-one patients with leukemia (lymphatic, myelogenous and monocytic) the titer of heterophilic antibodies (agglutinins for sheep red blood cells) was uniformly lower than in most normal persons and in patients suffering from diseases which resembled leukemia clinically. The range of titers in the serum of leukemic patients was not higher than 1/4 (with use of the technic of the reviewer), while in the controls it varied from 1/1 to 1/16. Injection of horse serum failed to stimulate an elevation of heterophilic antibodies in a patient with leukemia and in one with leukosarcoma. The diagnostic significance of the findings is emphasized.

I DAVIDSOHN

THE FATE OF AVIRULENT STREPTOCOCCI INJECTED INTO THE SKIN OF NORMAL AND SENSITIZED RABBITS D. M. ANGEVINE, *J Exper Med* **60** 269, 1934

Histologic examination showed that the inflammatory reaction following the injection of hemolytic streptococci into rabbits sensitized to this organism began sooner than in the normal animal, edema was more extensive, and both polymorphonuclear leukocytes and large mononuclear cells appeared sooner. The lesion of a sensitized animal was more sharply circumscribed, and there was necrosis of tissue, seldom seen in the normal animal. In sensitized animals local injury, with necrosis, favors the multiplication of relatively avirulent streptococci at the site of entry and explains their survival at a time when they have disappeared in the controls. In association with greater local injury and a more intense inflammatory reaction in the sensitized animal as compared with the normal, streptococci are fixed at their site of entry, they pass to adjacent lymph nodes in much smaller numbers and fail to reach the blood and internal organs.

FROM THE AUTHOR'S SUMMARY

THE MATERNAL TRANSMISSION OF VACCINIAL IMMUNITY IN SWINE J. B. NELSON, *J Exper Med* **60** 287, 1934

The protective substances produced by vaccinia virus in swine were transmitted repeatedly to the young by way of the colostrum of the sow. In two instances immunity acquired by suckling was demonstrable in the young of successive

farrowings, which numbered thirty-seven and fifty-seven pigs, respectively. The immunity acquired by suckling began to decline during the second month and was practically negligible by the end of the third month. Vaccinia virus introduced cutaneously during the first few days of life in the passively protected pigs exerted little or no immunizing effect.

FROM THE AUTHOR'S SUMMARY

THE EFFECT OF ANTICIDIN INJECTION AND IMMUNIZATION WITH STREPTOCOCCI UPON THE REACTIVITY OF RABBITS TO HORSE SERUM M P SCHULTZ and H F SWIFT, *J Exper Med* 60 323, 1934

The cutaneous responses of rabbits to small doses of horse serum given intracutaneously are described. After an original injection of 0.1 cc a secondary reaction often occurs about the ninth day, and tests at three day intervals with 0.001 cc indicate that general cutaneous hypersensitivity is established at this time. Circulating precipitins for horse serum appear later. As the degree of sensitivity increases, the lesions resulting from test doses reach a maximum development more quickly. The reactivity of rabbits to horse serum is greatly increased by antecedent sensitization of the animals with repeated small intracutaneous inoculations of indifferent streptococci or by immunization with large intravenous injections of either indifferent or hemolytic streptococci. Doses of indifferent streptococci precisely comparable to those producing greatly enhanced reactivity when given intracutaneously increase reactivity to horse serum irregularly and to a slight degree when injected intravenously. Increases in reactivity (allergic irritability) are made evident by the occurrence of larger skin lesions at the sites of the primary injections of horse serum, by an earlier development of more distinct secondary reactions in a higher percentage of animals and by a more rapid appearance of skin sensitivity to the small test doses, which may be first evidenced by delayed reactions at these injection sites. Accompanying these evidences of increased reactivity there is an early appearance of blood serum precipitins in high titer. There was no evidence of residual inflammation in any of the animals at the time reactivity to horse serum was tested. No attempt was made to determine the duration of this altered reactive capacity. It has been encountered in tests begun from eight to fourteen days after the last preliminary inoculation. It is suggested that the increased reaction described is brought about by a persisting alteration in the functional activity of the reticulo-endothelial system.

FROM THE AUTHORS' SUMMARY

THE INFLUENCE OF SEXUAL MATURITY UPON THE REACTIVITY OF RABBITS TO HORSE SERUM M P SCHULTZ, *J Exper Med* 60 339, 1934

Normal rabbits in the course of their development, after infancy, vary in their responses to minute doses of horse serum given intracutaneously. There is increased reactivity in males as they mature, beginning, in the stock employed in these experiments, at about the age of 13 weeks, when a weight of 1,700 Gm has been attained. The reactivity of normal females remains at a constant level, and the increase demonstrated in males does not take place in the females. The divergence in the degree of reactivity of males and females, beginning with the establishment of estrus, indicates that factors associated with sexual maturity in females are responsible for their low reactivity. The suppression of estrus by operative removal of the ovaries resulted in an increase of reactivity which, however, in the experiments reported here was probably not great enough to account entirely for the difference in the reactivity of mature males and females.

FROM THE AUTHOR'S SUMMARY

ANTIBODY FORMATION AFTER EXTIRPATION OF THE ANTIGEN-DEPOT P R CANNON and K L BURT, *J Immunol* 27 173, 1934

The extirpation of the antigen depot within from three seconds to ten minutes after the intradermal injection of a heavy suspension of living staphylococci or bacilli prodigiosus does not necessarily prevent their entrance into the blood stream.

and their later deposition in the liver and spleen. Postulation of a new mechanism for the production of antibody after removal of the antigen depot is unnecessary, at least until proof is available that antibody formation may occur independently of the escape of antigen from the original depot.

FROM THE AUTHORS' SUMMARY

DIFFERENT TOXINS PRODUCED BY SCARLATINAL STREPTOCOCCI S. B. HOOKER and E. M. FOLLENSBY, *J. Immunol.* **27** 177, 1934

Numerous reliably observed discrepancies in the hypothesis that the mechanism of scarlet fever involves a single toxin are readily explained by assuming that multiple antigenic toxins exist. This report demonstrates the existence of two such toxins, A and B, whose qualitative distinctiveness is evidenced both by immunologic and chemical criteria. These include specific antigenicity, neutralizability and erythrogenic activity and the effects of dialysis, adsorbents, precipitants and enzymic digestion. Other erythrogenic streptococcus toxins undoubtedly exist. A single toxigenic strain may procure A or B or both or neither.

FROM THE AUTHORS' SUMMARY

SERUM REACTIONS IN RHEUMATOID ARTHRITIS M. H. DAWSON, M. OLMSTEAD and E. L. JOST, *J. Immunol.* **27** 355, 1934

A comparative study of precipitins and agglutinins against *Streptococcus haemolyticus* has been made in the serums of seventy-one patients with rheumatoid arthritis and seventy-nine patients with other diseases. The results indicate that there is approximate, though not absolute, agreement of rheumatoid arthritis serums in their capacity to agglutinate strains of *Str. haemolyticus* and to precipitate various group-specific fractions of this organism. With certain exceptions, to which special reference is made, the control serums examined did not show the presence of either agglutinins or precipitins in significantly high dilutions. These findings offer suggestive evidence in favor of the hypothesis that rheumatoid arthritis is associated with infection by *Str. haemolyticus*.

FROM THE AUTHORS' SUMMARY

IMMUNIZING SUBSTANCES IN PNEUMOCOCCI L. D. FELTON, *J. Immunol.* **27** 379, 1934

Pneumococci, both type I and type II, dried by application of acetone followed by desiccation in a vacuum, retain their antigenicity. The cell may be divided into acid-soluble and acid-insoluble constituents. The acid-soluble fraction possesses most of the immunizing activity of the cell, the immunity obtained by injecting this fraction into white mice is largely specific. The acid-insoluble fraction, perhaps containing some intact cells, also possesses a small amount of the immunizing substance and produces in white mice a heterologous immunity. With the method used in this study, at least 90 per cent of the immunizing substance in the acid-soluble fraction may be precipitated by ethyl alcohol or by acetone. The work reported here is limited to tests on white mice, and to antigenicity as produced by a single injection of the immunizing substance.

FROM THE AUTHOR'S SUMMARY

## Tumors

METASTATIC TUMORS OF THE HEART E. M. BURKE, *Am. J. Cancer* **20** 33, 1934

In a study of 327 autopsies on patients with known malignant growths, 14 cases of metastatic involvement of the cardiac muscle were found. These constituted approximately 4.3 per cent of the routine autopsies made in such cases at the State Institute for the Study of Malignant Disease. While the proportion seems somewhat higher than a review of the literature would indicate, it can probably be explained by the fact that this series includes only cases in which malignancy was definitely established and was definitely the cause of death.

AUTHOR'S SUMMARY.

RELATIONSHIP OF INTERNAL SECRETIONS TO MALIGNANT TUMORS O O  
MEYER and C McTIERNAN, Am J Cancer 20 96, 1934

Thyroxine seems to inhibit tumor growth, but no other hormone has any demonstrable effect on tumor development, nor does removal of the glands of internal secretion which we studied prevent the usual rapid growth of sarcoma

FROM THE AUTHORS' SUMMARY

THE INFLUENCE OF LACTIC ACID AND SUGARS ON THE GROWTH OF TRANS-  
PLANTED MOUSE SARCOMA 180 I A PARIENTJEV, V D SUNTZEFF and  
W K DEVRIENT, Am J Cancer 20 117, 1934

We may conclude that under the conditions of our experiments various preparations of lactic acid exert a relatively slight inhibiting effect on the growth of mouse sarcoma 180. This effect was especially noticeable after subcutaneous injections of solutions of ethyl lactate, lactyl-lactic acid and glyceromonolactate. The inhibiting effect was observed in experiments in which the weight of the treated animals was not unfavorably affected by these substances, a condition obtaining especially after the use of glyceromonolactate. This substance did not affect the weight of the mice unfavorably. However, it is probable that in the majority of the experiments the inhibiting effect of the lactic acid preparations on sarcoma 180 must be attributed in part to the unfavorable effect which these substances exerted on the metabolism of the animals. Injection of sugars (dextrose and arabinose) either exerted no inhibiting effect on the growth of sarcoma 180 or one less than that observed after administration of lactic preparations.

AUTHORS' CONCLUSIONS

MYOBLASTOMA OF THE STRIATED MUSCLE PAUL KLEMPERER, Am J Cancer  
20:324, 1934

Six cases of myoblastoma of striated muscle are reported, and the literature is reviewed. About fifty cases have been recorded since the first description of this tumor seven years ago. The attainment of this high figure in such a comparatively short time indicates that myoblastoma of this nature is not uncommon. The chief localization is in the upper parts of the digestive and respiratory tracts. In the differential diagnosis xanthoma has chiefly to be considered.

FROM THE AUTHOR'S SUMMARY

METASTATIC TUMORS OF THE ADRENALS E M BURKE, Am J Cancer 20 338,  
1934

A survey of 371 cases coming to autopsy showed that the suprarenal gland is a site of metastatic involvement in a relatively high percentage of malignant tumors. The majority of malignant tumors will metastasize to the suprarenal gland, this series showing primary lesions in various locations in the body. Certain types of tumor, however, metastasize more readily to this gland than do others. Either suprarenal gland may be involved, depending on the location of the original lesion. The suprarenal gland shows metastases in many cases in which there is no general dissemination. The medulla is the site of the metastatic neoplasm more frequently than the cortex.

FROM THE AUTHOR'S CONCLUSIONS

A NEOPLASTIC DISEASE OF THE KIDNEY OF THE FROG, RANA PIPPIENS B  
LUCKÉ, Am J Cancer 20 352, 1934

In the kidneys of 158 frogs of the species *Rana pipiens* there has been observed a neoplastic disease which manifests itself grossly as solitary or multiple ivory-white tumors. Histologically these are composed of atypical epithelial cells, grouped around spaces, thus giving a glandlike appearance to the growths. The tumors

are locally destructive and infiltrate the adjacent kidney. In the majority of the cases the histologic picture is that of adenocarcinoma. The tumors differ from human adenocarcinoma in their failure to metastasize. In a large proportion of the tumors prominent intranuclear inclusions are present, which may be regarded as presumptive evidence of the activity of a filtrable virus. It is therefore suggested that these tumors are either caused by such a virus or that a virus has invaded the new growths. A trematode larva and a myxosporidium were found in many of the tumor-bearing kidneys, these are not regarded as of etiologic importance. Experiments in transmission are as yet indecisive. Most of the cases of this disease have been seen in frogs from the state of Vermont and from the adjacent parts of Canada, the incidence has been on the average 2 per cent. Evidence pointing to more widespread distribution is presented. The literature on tumors of frogs is reviewed.

FROM THE AUTHOR'S SUMMARY

MULTIPLE TUMORS IN TARRED AND RADIATED ANIMALS. M. C. REINHARD and A. A. THIBAudeau, *Am J Cancer* **20** 380, 1934.

The surprising fact that tumors developed relatively infrequently at the sites of painting leads one to consider the possibility that the action may not be strictly a local one, but a general response or intoxication due to the tarring.

RHABDOMYOSARCOMA OF THE SPERMATIC CORD. E. F. HIRSCH, *Am J Cancer* **20** 398, 1934.

A rhabdomyosarcoma of the right spermatic cord in a youth aged 16 years is described. The tumor consisted of long, fibrillar, spindle-shaped cells with cross-striations and of large multinucleated cells resembling segments of skeletal muscle fibers. These cells contained an abundance of glycogen granules.

FROM THE AUTHOR'S SUMMARY

HAS THE CANCER CELL ANY DIFFERENTIAL CHARACTERISTICS? W. C. MACCARTY and E. HAUMEDER, *Am J Cancer* **20** 403, 1934.

This article discusses the results of comparative studies of the nucleolus and the nucleus in malignant and nonmalignant cells.

MULTIPLE PRIMARY CANCER. B. F. SCHREINER and W. H. WEHR, *Am J Cancer* **20** 418, 1934.

Primary multiple cancer occurred in 27 per cent of all cases of malignant growth observed. The most common primary multiple tumor is the basal cell epithelioma of the skin. The squamous cell or pearl-forming epithelioma of the skin is next in frequency. Combinations of basal cell and pearl cell epithelioma either in one person or in one specimen are not uncommon. Tumors of the mucous membrane of the oral cavity associated with malignant growth of the skin are third in frequency. Malignant epithelial tumors were associated with some variety of sarcoma in six cases. Primary bilateral cancer of the female breast was observed in fifteen cases and cancer of the breast associated with cancer of the female generative organs in eighteen cases. Leukemia was associated with cancer in four cases.

FROM THE AUTHORS' CONCLUSIONS

METASTASIS OF MELANOMA BEFORE RECOGNITION OF PRIMARY GROWTH. S. SELIG, *Am J Cancer* **20** 594, 1934.

A case is described in which an apparently primary nonpigmented melanoma in the depth of the skin over the right heel metastasized in the groin four years before it was recognized. The tumor was radioresistant.

TRANSPLANTATION OF CARCINOMA DURING SKIN-GRAFTING J W SPIES, F E ADAIR and M C JOBE, *Am J Cancer* **20** 606, 1934

In a case of skin-grafting from the right thigh to cover a granulating surface after a mastectomy, mammary cancer appears to have been transferred to the area from which the grafts were taken

AMYLASE IN MOUSE SARCOMA F H SCHARLES, W T SALTER and P D ROBB, *Am J Cancer* **20** 613 and 625, 1934

An enzyme found in aqueous extracts of mouse sarcoma 180 which is capable of splitting glycogen is described. Its activity is destroyed by heating at 100 C for fifteen minutes or at 60 C for one hour. The optimum temperature for its activity in vitro is 48-50 C, and the optimum  $p_H$  is about 6.2. The enzyme splits glycogen into several compounds, the ratio of whose reducing value to loss of glycogen is variable. The ratio depends both on the concentration of the extract used and on the time through which the reaction is allowed to continue. It is further shown that lactic acid is not produced directly from glycogen by crude tumor extract. When the glycogen concentration is varied, with constant concentration of the tumor extract or, conversely, when a variable concentration of tumor extract is used with a constant amount of glycogen, the loss of glycogen in a given time is a linear function of the logarithm of the concentration varied. On this fact is based a method, which is described, for measuring the activity of the enzyme.

The amylolytic activity of mouse sarcoma 180 has been studied in animals subjected to various chemical and physiologic conditions. Most of these produced no obvious variation in the amylolytic power of tumor tissue borne by the animals. The notable exceptions were injections of thyroxine and insulin, following which a definite change of enzymic activity could be demonstrated. No effect could be demonstrated from epinephrine.

FROM THE AUTHORS' SUMMARIES

GENETIC STUDIES ON THE TRANSPLANTATION OF TUMORS J J BITTNER, *Am J Cancer* **20** 834, 1934

Rhythms of growth do not occur in transplanted tumors. The tumor cell does not become adapted. The tumor cell acquires no change in virulence. Hereditary factors determine the characteristics of both the host and the tumor cell. Animals of controlled genetic constitution are necessary for investigations based on tumor transplantation.

SACROCOCYGEAL CHORDOMA IN CHILDREN A H MONTGOMERY and I J WOLMAN, *Am J Dis Child* **46** 1263, 1933

This article is based on the study of 108 reported cases of chordoma, 63 of which were in the sacrococcygeal region. Three cases of the latter type in infants are reported. The diagnosis may be furthered by the presence of physaliphores in the fluid obtained by puncture of the tumor. The typical cell is large, irregular and sharply defined, with a large vesicular nucleus. A mucinous substance accumulates in the cell in the form of large vesicles.

RALPH FULLER

GRANULOSA CELL OVARIAN TUMORS AND PRECOCIOUS PUBERTY EMIL NOVAK, *Am J Obst & Gynec* **26** 505, 1933

Three cases of granulosa cell ovarian tumor are reported in girls from 3 to 6 years of age. The clinical features were precocious development of the secondary female characteristics and menstruation. Microscopically the tumor consists of granulosa cell rests left over from the formation of the follicular apparatus. Such tumors retain the function of producing the female sex hormone, and this fact explains the symptoms. An excess of the hormone in the child precipitates the changes of puberty.

JACOB KLEIN



MELANOMA AND PIGMENTED MOLES G F LAIDLAW and M R MURRAY,  
Am J Path 9 827, 1933

Photomicrographs of silver-stained sections are presented to show that pigmented moles are rich in nerve fibers and tactile cells. End-bulbs of nerve fibers make contact with nevus cells exactly as they do with the tactile cells of the epidermis and hair follicles. Masson's observations of a profusion of structures resembling Meissner's tactile corpuscles in certain pigmented moles is confirmed. These moles, in elevation, pigmentation, innervation and grouping of tactile cells in the corium, bear a striking resemblance to the tactile spots of reptiles and Amphibia. In the course of evolution the reptilian tactile spots were replaced by mammalian hair follicles. The pigmented, hairy mole appears to be a link or transition from pigmented tactile organs of the reptilian type to hairy tactile organs of the mammalian type. In its hair follicles it is mammalian, in its pigmentation, elevation and groups of innervated tactile cells in the corium it follows the amphibian-reptilian pattern. Phylogenetic and ontogenetic hypotheses are presented.

#### AUTHORS' SUMMARY

THE CYTOLOGY OF THE GLIOMA GROUP L B COX, Am J Path 9 839, 1933

One conclusion derived from this study is that names with an embryogenetic significance do not in all cases give the true values of the cells described. This in particular applies to the medulloblast and to certain of the spongioblasts and astroblasts. The neuroblast is also a cell that is particularly difficult to identify. It may be confused with included nerve cells, cells of the astroblast type and even with certain anaplastic, rapidly subdividing cells. The nature of a tumor is frequently more correctly interpreted by assuming that anaplastic changes have overtaken a well differentiated tissue than by ascribing it to differentiation of embryonal cells. The medulloblastoma of childhood, however, possesses certain qualities that suggest the possibility of an embryonal origin. The ordinary gliomas appear to fall into certain categories, as follows:

#### 1 Tumors of adult tissue

- (a) Astrocytoma and its modifications
- (b) Ependymoma and its modifications
- (c) Oligodendroglioma
- (d) Pinealoma
- (e) Adult ganglioneuroma

#### 2 Highly anaplastic tumors which may occur independently or in association with any of the foregoing tumors (glioblastoma multiforme)

#### 3 Transitional forms between these

- (a) Astroblastoma
- (b) Polar spongioblastoma

#### 4 The medulloblastoma (possibly an embryonal tumor)

#### 5 Rare tumors of the type of medullo-epithelioma and neuro-epithelioma, concerning which no opinion is expressed here

The mitotic figure content of such tumors offers the most accurate index of their activity, rather than deductions derived from their resemblance to embryonal cells. The difficulty in distinguishing between neoplastic cells and those that are derived from the glial tissue is discussed in some detail. The great advantage of post-mortem material as opposed to operative fragments is here apparent.

#### AUTHOR'S CONCLUSIONS

FIBROMA OF THE BREAST B HALPERT and D L DIAL, Am J Path 9 905, 1933

A pure fibroma of the breast, one of the few ever recorded, is reported. It occurred in a woman 47 years of age. The same breast on two previous occasions was the site of neoplastic growth. The structure of the tumor removed at the

## ARCHIVES OF PATHOLOGY

first operation is not known The growth removed at the second operation was a pure fibroma in fibro-adenoma The one removed at the third operation was a pure fibroma in which the neoplastic tissue closely resembled the stroma of the second growth

AUTHORS' SUMMARY

LIPOSARCOMA F A FENDER, Am J Path 9 909, 1933

A case of liposarcoma with late intracranial metastases is reported The few cases available for study seem to indicate that these tumors grow slowly, are radiosensitive, metastasize late and show a tendency to metastasize to the cranium

AUTHOR'S SUMMARY

CARCINOMA OF TIL TUBLS AND OVARILS SLCONDARY TO CARCINOMA OF THE BODY OF TIL UTLRUS JOHN A SIMPSON, Am J Path 10 1, 1934

Carcinoma of the body of the uterus may extend through the wall to pelvic structures adherent to the uterus, and cancer cells may fall into the peritoneal cavity and give rise to implantation carcinoma The lymphatic and the venous sinuses of the uterus may be invaded by carcinoma, and secondary carcinoma of the tubes and ovaries may arise from permeation of the body of the uterus cancer emboli By continuous extension of carcinoma of the tubes, here particles may be broken off and the mucosa can be replaced by the growth, which may extend into and replace the mucosa of the uterine portions of the tubes, in the fimbriae and give rise to superficial carcinoma In like manner parts of the uterine carcinoma may become implanted in the uterine and cervical mucosa and in wounds of the vagina and the abdominal incision This article is illustrated by 38 plates with 113 figures

INJURY AS A CAUSATIVE FACTOR OF MALIGNANT TUMORS W B COLEY and N L HIGINBOTHAM, Ann Surg 98 991, 1933

From a study of 205 cases, Coley and Higinbotham conclude 1 A single local trauma may be an important factor, probably the determining factor, in the development of a malignant tumor of any type 2 Trauma is a causative factor in a larger proportion of cases of sarcoma than of carcinoma, and in a larger proportion of cases of bone sarcoma than of soft-part sarcoma 3 The interval of time between the injury and the appearance of the tumor is often much shorter than is recognized by most writers In the majority of cases the tumor develops within the first month or six weeks after the injury, but in a considerable number of cases it may develop within one or two weeks The latter cases justify classification as instances of acute traumatic malignant conditions, as originally suggested by English surgeons 4 While courts and compensation bureaus both in this country and in Europe have generally recognized single trauma as a competent producing cause of malignant tumor, it is only fair to the insurance carriers that each case be studied and judged on its own merits 5 If the case in question fulfills all the conditions laid down by Segond, a causal relationship between the injury and the tumor must be admitted

MULTIPLE GANGLIONEUROMA OF THE SKIN H MONTGOMERY and PAUL A O'LEARY, Arch Dermat & Syph 29 26, 1934

A man, aged 27, presented discrete, round, firm, reddish papules, from 1 mm to 1 cm in diameter, which first appeared on the buttocks and then spread to the pubes, abdomen, axillae, back and neck Sections showed infiltration by round cells, histiocytes and sympathetic ganglion cells Later the ganglion cells degenerated, and the lesions practically disappeared The authors believe that such a condition is due to a malformation in which the primitive neurocytes accompanying the superficial blood vessels, or independent of them, develop into ganglion cells

The patient also showed incomplete rotation of the colon with an increase of the ganglion cells of the appendix. A review of the literature failed to disclose a case comparable on the basis of clinical and histopathologic features

S W BECKER

BLOOD LIPIDS IN XANTHOMA J C MICHAEL and H O NICHOLAS, Arch Dermat & Syph **29** 228, 1934

Total lipids, neutral fats, soaps and fatty acids, phosphatides and cholesterol were determined in the blood of four patients with xanthoma multiplex and five with xanthelasma. The lipid constituents of the blood showed an abnormal distribution. This, of course, confirms the findings of Bloch and Schaaf and Werner. Michael and Nicholas attempted to prove or disprove the theory of Schaaf and Werner that an instability of the oil-water emulsion exists in the blood of patients with xanthoma. They endeavored to break up the emulsions in these cases on the theory that if they were unstable they would be broken up more easily than the emulsions that exist in normal serums. Attempts to do this in several ways failed. They believe, therefore, that there are many other constituents in the blood serum which may play a major part in the production of a stable or an unstable oil-water emulsion, e g, the serum proteins, calcium and sodium soaps of the fatty acids and other unknown emulsifying or de-emulsifying agents.

S W BECKER

MULTIPLE CARCINOMA AND PIGMENTARY DERMATOSIS IN A NEGRO BOY R HOPKINS and M T VAN STUDDIFORD, Arch Dermat & Syph **29** 408, 1934

An unusual case of multiple squamous cell carcinoma, in a Negro boy, aged 4, is reported. Pigmented macules had developed on his face at the age of 1 year. About this time a wartlike tumor developed on the left lower eyelid. A second warty growth appeared on the nose and grew rapidly, projecting 1 cm above the surface of the skin. The pigmented macules then appeared over the neck, arms, hands and legs. At the age of 4½ years three or four tumors developed on the face, enlarging and becoming ulcers. They progressed rapidly, and in spite of radium treatments he died four months after admission. Section of the tumors showed squamous cell carcinoma. In discussing the pigmentary dermatosis, xeroderma pigmentosum and arsenical pigmentation were considered. At autopsy no metastatic lesions were found.

S W BECKER

MEDULLOBLASTOMA (GRANULOBLASTOMA) OF THE CEREBELLUM L STEVENSON and F ECHLIN, Arch Neurol & Psychiat **31** 93, 1934

Stevenson and Echlin describe six cases of tumor of the cerebellum which, in their opinion, originated from the granular layers. For this reason they suggest the name "granuloblastoma." Two such tumors have been previously described by them as medulloblastoma. The granuloblastoma, they think, grows from the cells of the external surface of the cerebellar leaflets, the so-called external granular layer, and pushes them apart. The cells of the tumor are round, possess little cytoplasm and greatly resemble neuroblasts. The tumor is rich in connective tissue.

GEORGE B HASSIN

### Medicolegal Pathology

FORENSIC APPLICATION OF INDIVIDUALITY TESTS K LANDSTEINER, J A M A **103** 1041, 1934

In this review by the discoverer of the blood groups the scientific basis for the medicolegal application of blood grouping is concisely presented. Bernstein's

theory that the four blood groups are inherited by means of three allelomorphic genes, A, B and R, is now generally accepted. With regard to the agglutinogens M and N, the theory of heredity proposed by Landsteiner and Levine, who discovered these agglutinogens in 1927, is undoubtedly correct, as evidenced in studies by eight independent workers on families including 2,447 children. According to this theory, the agglutinogens are inherited by means of a single pair of allelomorphic genes, M and N. The theory has also been confirmed by statistical data, and by investigations on more than 6,000 children and their mothers. The agglutinogens M and N have already been used in several hundred lawsuits involving the parentage of children, in Germany, Denmark and Sweden. By the combined use of the agglutinogens A, B, M and N, one of three men falsely accused of paternity can be exonerated. The presence of the agglutinogens A and B can be demonstrated by the absorption technic in old dried blood, in semen and in saliva. A number of authors have applied this method successfully in criminal cases. The properties M and N, though absent from semen and saliva, can be demonstrated in dried blood by the use of a suitable technic. A. S. WIENER

AGGLUTINOGENS M AND N IN BELGIUM P. MORFAU, *Ann d méd leg* **14** 563, 1934

The distribution of the MN types among 3,100 Belgians was as follows: type M, 28.89 per cent, type N, 20.77 per cent, and type MN, 50.33 per cent. There was no significant difference in the distributions in the two sexes at different ages or in patients with tuberculosis, syphilis, mental disease or cancer. The inheritance of the agglutinogens in 200 families with 739 children was in accord with the theory of Landsteiner and Levine that the transmission is by a single pair of allelomorphic genes. When 502 mothers with their 1,041 infants were examined, not once was a type M mother with a type N child or a type N mother with a type M child found. A. S. WIENER

IDENTIFICATION OF BLOOD GROUPS J. JADIN, *Arch internat de méd exper* **9** 325, 1934

The group to which spots of blood, urine or saliva belong can be determined by three methods based on the action of antihemolysins, anti-agglutinins and iso-agglutinins. There is a close correlation between the groups found by identification of blood, urine and saliva. The most sensitive method for their determination is that of absorption with heterologous hemolysins. Results with group A antigens are more satisfactory than those with group B antigens because of the difficulty in obtaining anti-B hemolysins. ELIZABETH MCBROOM

THE USE OF COMMERCIAL SERUM, ANTI-M AND ANTI-N, FOR FORENSIC WORK H. SCHACKOWITZ, *Deutsche Ztschr f d ges gerichtl Med* **23** 363, 1934

Commercial serum prepared by two different companies was tested. The serum in some of the vials was found to be of low titer, and some of the samples gave nonspecific reactions. Before using commercial serum for medicolegal work, therefore, the investigator must test it for potency and specificity. A. S. WIFNER

THE STUDY OF SIGNS OF VITAL REACTION K. WALCHER, *Deutsche Ztschr f ges gerichtl Med* **24** 16, 1934

The importance of signs of vital reaction in determining the mode of death is discussed with particular reference to the possible crushing of dead bodies by railroad trains, trucks, etc. Walcher urges close study for hemorrhagic infiltrations into the muscles at points remote from the crushed areas and tears for evidence of an absorption of blood in the diaphragm, and for signs of an aspiration of

brain substance When death is supposed to have occurred without loss of blood, a marked anemia of the peripheral parts of the body as well as of the internal organs may be significant

THE RÔLE OF CALCIUM CARBONATE IN THE CAUSTIC ACTION OF POTASSIUM CYANIDE H ELBEI, *Deutsche Ztschr f ges gerichtl Med* **24** 25, 1934

The caustic action of potassium cyanide depends on its alkaline nature The action is not increased by calcium carbonate, as sometimes claimed, but rather is diminished

THE GROWTH OF DECIDUAL TISSUE IN THE UTERINE WALL FOLLOWING INJURY IN ATTEMPTED ABORTION NIPPE, *Deutsche Ztschr f ges gerichtl Med* **24** 30, 1934

A case is described which illustrates the possibility that trauma of the uterine wall in attempted instrumental abortion may be followed by the growth of decidual tissue The ectopic occurrence of decidual tissue and the production of decidua in animals by intra-uterine and extra-uterine injuries support this possibility As in the case reported, the injury must have taken place some time before death, without immediate abortion and without complete perforation of the uterus

RESULTS OF A SEROLOGIC STUDY OF THE POPULATION OF BERLIN F SCHIFF and A HIEN, *Klin Wchnschr* **13** 375, 1934

During a period of ten years the blood groups of 30,000 persons were determined by examining both the cells and the serum in each case The following distribution of the blood groups was found group O, 36.6 per cent, group A, 42.23 per cent, group B, 14.69 per cent, and group AB, 6.46 per cent For these frequencies,  $p + q + r = 1.0008$ , so that these statistical data support the Bernstein theory of the heredity of the blood groups

A S WIENER

### Technical

FRACTIONAL ULTRAFILTRATION H C ALLISBAUGH and R R HYDE, *Am J Hyg* **21** 64, 1935

This paper presents an improved technic for the preparation of membranes of the Bechhold type An improved calibrated holder for these membranes has been devised This gives a series of efficient ultrafilters of graded porosity A rotary collecting filter chamber has been constructed which facilitates the fractionation of filtrates under negative pressure so that the rate of flow and the titer of the filtrate can be readily expressed in terms of time The results obtained with these improvements make possible the evaluation of certain problems that have arisen in ultrafiltration and the more accurate determination of the particulate size of dispersed particles in colloidal systems

FROM THE AUTHORS' SUMMARY

THE FRIEDMAN TEST IN PREGNANCY M A GOLDBERGLER, U J SALMON and R T FRANK, *J A M A* **103** 1210, 1934

In 1,093 normal intra-uterine pregnancies the percentage of false positive Friedman tests was 0.09 The percentage of false negative tests was 0.55 This percentage of error is small as compared with the percentages reported by others, and the reduction is attributed to the fact that duplicate tests were made At least 3.4 per cent of rabbits appear to be refractory to the Friedman test In forty-four cases of ectopic pregnancy the percentage of false negative tests was 32 This high percentage of negative tests is accounted for by the presence of dead or degenerated villi In both intra-uterine and extra-uterine pregnancies the Friedman test is dependent on the viability of the chorion In missed abortion the

Friedman test may remain positive for as long as thirty days after the death of the fetus. In incomplete abortion the Friedman test may be positive. The presence of a viable fetus can be determined by study of the female sex hormone of the blood. In the diagnosis of ectopic gestation the Friedman test is of value only in cases in which it is positive. If the test is negative in a case of suspected ectopic pregnancy, the clinical history and observations should determine the diagnosis.

FROM THE AUTHORS' SUMMARY

HIGH FREQUENCY CURRENTS FOR BIOPSIES J P GUEQUIERRE and F D WEIDMAN, J A M A **103** 1693, 1934

The objections of the pathologist to the use of coagulating currents can be largely overcome by adhering to the cutting current. The method is not infallible, owing to such factors as muscular twitch, unsteadiness of the hand or an anatomic location such as the face, which limits the removal to a very small specimen. Barring these conditions, the readiness of the apparatus, the bloodlessness of the operation, the insensitiveness to postoperative pain and the psychologic effect on the patient all contribute to securing a greater number of biopsies, which are sorely needed for the advance of dermatology in general, to say nothing of the assistance that accrues in confirming the diagnosis.

AUTHORS' SUMMARY

ASPIRATION BIOPSY H E MARTIN and E B ELLIS, Surg, Gynec & Obst **59** 578, 1934

The indications for biopsy by needle puncture and aspiration and the technic are described in detail. Over 1,400 positive histologic diagnoses have been made by this method at Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City.

AUTHORS' SUMMARY

# Society Transactions

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## NEW YORK PATHOLOGICAL SOCIETY

*Regular Meeting, Dec 27, 1934*

NATHAN CHANDLER FOOT, *Vice-President, in the Chair*

IRVING GRAEF, *Secretary*

### CONGENITAL APLASIA OF THE ISLANDS OF LANGERHANS WITH DIABETES MELLITUS P A H MIDELFART (by invitation) and ROBERT A MOORE

In some cases of diabetes mellitus in children a numerical decrease in the islands of Langerhans has been observed. In a few cases there are no demonstrable islands.

A girl, 13 years of age, was admitted to New York Hospital on the service of Dr Eugene DuBois because of pain in the back. Her birth and the first year of life were uneventful. Near the second birthday the mother noticed polydipsia and polyuria. At 7 years of age there was noticeable failure of vision. At this time a diagnosis of diabetes was made.

No regular treatment had been instituted. Physical examination showed underdevelopment and undernourishment, bilateral cataract, a blowing apical systolic murmur, slight thickening and tortuosity of the peripheral arteries and underdevelopment of the external genitalia. The blood showed slight leukocytosis, moderate anemia and a slight elevation of blood urea nitrogen. The cholesterol was slightly elevated, the phosphorus and the calcium content were normal. X-ray photographs of the long bones showed slight decalcification. The urine contained streptococci in pure culture and many pus cells. It contained less than 4 rat units of ovarian follicular hormone per liter.

The urinary infection was controlled by drainage and irrigation, the diabetes, with difficulty by diet and insulin. Three months after admission to the hospital the child died after a convulsion of unknown cause.

At autopsy the urinary tract was seen to be the seat of a chronic suppurative inflammatory process. The genitalia were infantile, and the ovaries contained no follicles. The thyroid gland, thymus and adrenal glands were normal. A count of the cells of the pituitary gland showed 58.2 per cent chromophobes, 27.8 per cent acidophils and 14 per cent basophils (16,755 cells counted). The pancreas grossly was slightly decreased in size, and microscopically revealed only very few structures similar to islands. The structure of this organ as a whole was immature, there was abundant stroma, but no evidence of recent or old inflammation.

It is concluded that the diabetes in this child was dependent on congenital aplasia of the islands of Langerhans, and that death was due to the urinary infection.

### METASTASIZING TUMOR OF THE PINEAL BODY ALFRED PLAUF

An Austrian hatter, 33 years old, was treated for a hypophyseal syndrome four years before his death. At that time he complained of polyuria, poor vision and loss of sex power. He received treatment with roentgen rays of high voltage, the polyuria disappeared, his vision improved sufficiently so that he could return to work, but sex power was not restored.

About two and a half years later he noticed pain in the back, starting at the neck and radiating downward, numbness of the hands and feet followed. His inability to walk finally brought the patient to the hospital, where during his two months' stay, he offered a variety of neurologic symptoms which led to the assump-

tion of a widely distributed cerebrospinal lesion of unknown character. There were no symptoms pointing to a focus. The search for tubercle bacilli showed none. The Wassermann reaction was negative. As the patient was a hatter, a suspicion arose that poisons used in his profession might have caused polyneuritis, but the powders which the patient used and the scalings from his hyperkeratotic hands and feet did not contain lead, arsenic, mercury or antimony. His spinal fluid contained several thousand cells, but no definite diagnosis could be made from their character. There was no block. The visual fields were slightly contracted concentrically, both pupils were almost fixed to light, there was almost complete optic atrophy. Limitation of upward and inward movements of the right eye was noted. In the last two weeks before death the patient became disoriented and psychotic. At this time all forms of sensation were disturbed. There was ophthalmoplegia. Meningitic symptoms were absent.

The following diagnoses were considered during the course of the disease: an old pituitary lesion with probable superimposed neuritis, chiefly motor, a glioma of the optic nerves, arsenical poisoning, a diffuse infectious lesion of the central nervous system, sarcomatosis of the meninges, and leaking suprasellar cyst.

At autopsy the brain and its meninges showed nothing remarkable grossly. The cranial nerves, notably the oculomotor, trigeminus and facial, were much thicker than normal. The optic nerves were atrophic. The olfactory nerves were normal. The thickening of nerves on the left side was slightly more marked than that of nerves on the right. On slicing the brain which was fixed in solution of formaldehyde, distention of the ventricles was noted. Only at a later reexamination an indefinite, not at all remarkable mass of tissue was discovered in the surroundings of the vena magna. There was no circumscribed tumor in the region of the pineal gland.

On the inside of the lumbar dura mater, occasional flat gray elevations, measuring up to 1 cm. in diameter, were seen. The spinal meninges appeared opaque in spots. The spinal ganglions were thickened and firm. They were about three times as large as normal. Their cut surfaces were grayish white and had no markings. The filaments of the cauda equina were thickened throughout. The conus terminalis looked normal.

Microscopic examination of many different pieces gave a rather uniform picture. The brain and spinal cord proper were not infiltrated except for the perivascular spaces in the superficial layers. The soft meninges, however, and the nerves were diffusely infiltrated and widely destroyed by a peculiar tissue which consisted of large and small cells, but did not show any stroma. These two cell types resembled the two kinds of cells that are found in the pineal gland and in tumors of the pineal gland. The small cells were slightly larger than lymphocytes, they were not round, but irregularly ovoid, sometimes dumbbell-shaped. Their nuclei were not so rich in chromatin as the nuclei of lymphocytes are. Some of the large cells definitely resembled the large cells of the pineal gland, with indistinct cytoplasm, large nucleus and large deep-staining nuclear inclusion.

In the region of the pineal gland, a nodule the size of a small bean was situated. It contained acervulus. It was infiltrated by tumor as described, and on serial section remnants of the connective tissue of the adult pineal gland could be demonstrated. Tumor was found also in the choroid plexus of the fourth ventricle. The infundibulum and tuber cinereum, in relation to the tumor, did not differ from other portions of the brain. At the roots of the cerebral nerves, a sharp borderline between the intact brain tissue and the tumorous nerve tissue was present.

It must be assumed that the tumor cells had been distributed by the spinal fluid. This mode of metastasis has been described for tumors originating from the choroid plexus. Only one case is on record (that of Berblinger) in which a tumor of the pineal gland metastasized in this fashion. Aside from the fact that in Berblinger's case a large tumor of this gland was present, the two cases are almost exactly alike in every detail, including the age and sex of the patient.

The tumor is called "pinealocytoma" ("a tumor formed by the cells of the pineal gland") without any attempt at classification.



## DISCUSSION

IRVING GRAEF Did Dr Plaut notice any chromophilic granules in the cytoplasm of these cells? How did the tumor cells behave with acid and basic dyes?

ALFRED PLAUT Many experiments in staining were made with these cells, but none of the stains used gave better information than the hematoxylin-eosin stain. Silver stains were applied. No luck was had with the Rio Hortega method, but I must add that no luck was had with this method when it was applied to normal pineal glands. No stain for special granules was applied. Several silver stains were used. It was not possible to demonstrate prolongations of the large cells with phosphotungstic acid-hematoxylin.

MILTON HELPERN How striking was the lesion in the pineal gland?

ALFRED PLAUT You mean microscopically?

MILTON HELPERN Yes.

ALFRED PLAUT It was exactly the same tumor that I saw in all the other sections. There was an indefinite mass in the surroundings of the vena magna, and in the region of the pineal gland, attached to normal habenula, there was a mass about the size of a bean. In the first sections cut the tissue consisted of tumor only. On continuing I found some dense stroma which I took for the remnant of the normal pineal gland.

THE INFLUENCE OF DINITROPHENOL ON CARBOHYDRATE METABOLISM. MAX WISNIOFSKY, ARTHUR P. KANE, EDMUND L. SHLEVIN and CHARLES S. BYRON (by invitation)

The prevailing opinion is that all measures, except exercise, which stimulate the general metabolism have a depressing action on the tolerance of the diabetic patient for carbohydrates. In dinitrophenol one has an ideal substance with which to test the validity of this conception, for, in the words of Hall, "Dinitrophenol is well adapted to the experimental study of the various responses of the organism to conditions of accelerated tissue metabolism." The following is a summary of our findings and conclusions.

In normal persons dinitrophenol causes a significant increase in the concentration of the blood sugar both at the fasting level and after the ingestion of dextrose. In the present state of knowledge, the causative mechanism cannot be determined. The elevation of the blood sugar level in hyperthyroidism, hyperadrenalinism and other conditions in which there is an augmentation in the production of heat must in part be attributed to the increase in oxidative metabolism.

Dinitrophenol does not cause any significant change in the concentration of blood sugar in diabetes mellitus, either at the fasting level or after the ingestion of dextrose. There is, however, a decided reduction in glycosuria after the administration of dextrose, which is to be explained on the basis of an elevation of the renal threshold for dextrose. These findings offer direct proof that an increase in oxidative metabolism does not cause a depreciation in tolerance for carbohydrates in diabetes mellitus. The decrease in tolerance which occurs in diabetes mellitus associated with hyperthyroidism and other conditions in which there is an increase in heat production must be ascribed to other factors.

The findings reported are not to be taken as a brief for the use of dinitrophenol. The sole purpose of this work was to study the influence of increased production of heat on carbohydrate metabolism.

MENINGO-ENCEPHALITIS CAUSED BY CYSTICERCUS CELLULOSAE. VERA B. DOIGOPOL and (by invitation) MARCUS NEUSTAEDTER

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A Mexican woman, 31 years old, who suffered from persistent headaches and transient impairment of vision in the left eye, vomiting and convulsions followed by impairment of vision in the right eye, showed for a few weeks eosinophilia in the blood (10 per cent) and in the cerebrospinal fluid (up to 26 per cent). No

ova were found in the stools, nor hooklets in the spinal fluid. The progressive impairment of vision was accompanied by generalized clonic convulsions. After the operation of decompression a paralysis of the left side of the body developed. The patient died one year and nine months after the onset of the illness.

Necropsy revealed plastic basal meningitis and a racemose cysticercus cyst of the base of the brain and of the right sylvian fissure. The exudate contained lymphocytes, plasma cells, round phagocytes with refractile granules, and foreign body giant cells, no eosinophils were found. No cysticerci were found in the ventricles or in the brain substance. The cyst wall showed the characteristic histologic structure (chitinous, nuclear and reticular layers). Intracystic structures resembling dead parasites were seen in two evaginations of the cyst. Reactive capsules surrounded several others. The cortex at the base of the brain and the ventricular walls showed perivascular infiltrations consisting of lymphocytes and plasma cells, with some glial reaction. A cortical and subcortical softening was present in the right hemisphere. The arteries at the base of the brain and the cortical branches of the right middle cerebral artery showed typical cysticercus arteritis. Arteries remote from parasites showed no changes. No tapeworm was found in the intestine.

#### DISCUSSION

PAUL KLEMPERER. Is the meningitis in cysticercosis limited to the vicinity of the cysts, or may it extend beyond them? Is the reaction of the brain in this case not unusually severe, or is such a severe encephalitis in cysticercus infestation usual?

VERA B. DOLGOPOL. In the case of a single cyst, the meningitis is usually limited to the immediate proximity of the cyst. When there are several cysts far apart on the convexities, the meningitis is also localized, but if the cyst occurs at the base, where it assumes a racemose form, the meningitis spreads beyond the presence of the cysticercus. About the severity of the encephalitic changes, similar changes on the surface of the ventricles have been described, but in our case they were more extensive than usual.

J. M. RAVID. Can you explain the exact localization of the parasites in the brain?

VERA B. DOLGOPOL. I do not think in general very much is known as to how the parasite reaches any organ. One cannot say anything definite about the reason why it comes to the brain. The racemose character of the cyst at the base of the brain is explained largely by the width of the meningeal spaces there, which give the cyst room to form evaginations and a chance to twist around. As to how the parasite reaches the brain and by what it is directed there, there is no definite information.

#### AN OSTEOPLASTIC TUMOR OF OBSCURE ORIGIN AND RELATIONSHIP JACOBSON

A woman, 29 years of age, was admitted to the Hospital for Joint Diseases on Aug. 15, 1932, with a chief complaint of pains in the back.

Four years previously, following a fall, constant pain in the back and left shoulder set in. A physician diagnosed arthritis. In October 1931, the pains became increasingly severe. In April 1932 a cold in the head accompanied by shooting pains caused a sudden severe illness. The patient was taken to Beth-El Hospital unconscious. There, after she had been in stupor for a few days, head traction was instituted. After seven weeks she was discharged, her shooting pains gone, the others persisting. Braces were prescribed by an outside physician. The pain became steadily worse, constant and pounding on motion, a swelling appeared. Dr. Wishner referred her to the Hospital for Joint Diseases.

At a point from  $\frac{1}{2}$  to 1 inch (about 1.3 to 2.5 cm.) to the left of the midline, overlying dorsal vertebrae V to VII, was a soft, very tender mass measuring 3 inches (7.6 cm.) in length, which was neither hot nor red. It was excised and found to lie very close on, though it was not continuous with, the vertebral